SHIPPING AND WAR TAXATION. *See p.* 292.
PASSENGER STEAMER FOR ADRIATIC SERVICE (Drawings). *See pp.* 296–298.

SHIPBUILDING AND SHIPPING RECORD. *October* 7, 1915.
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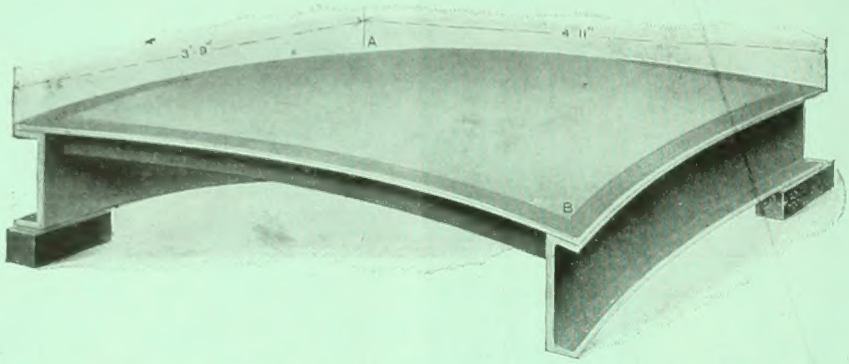

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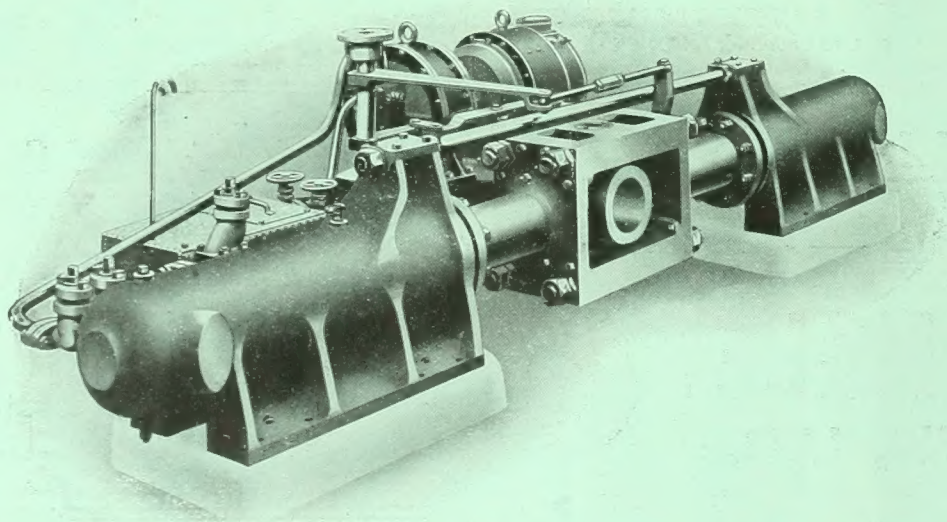

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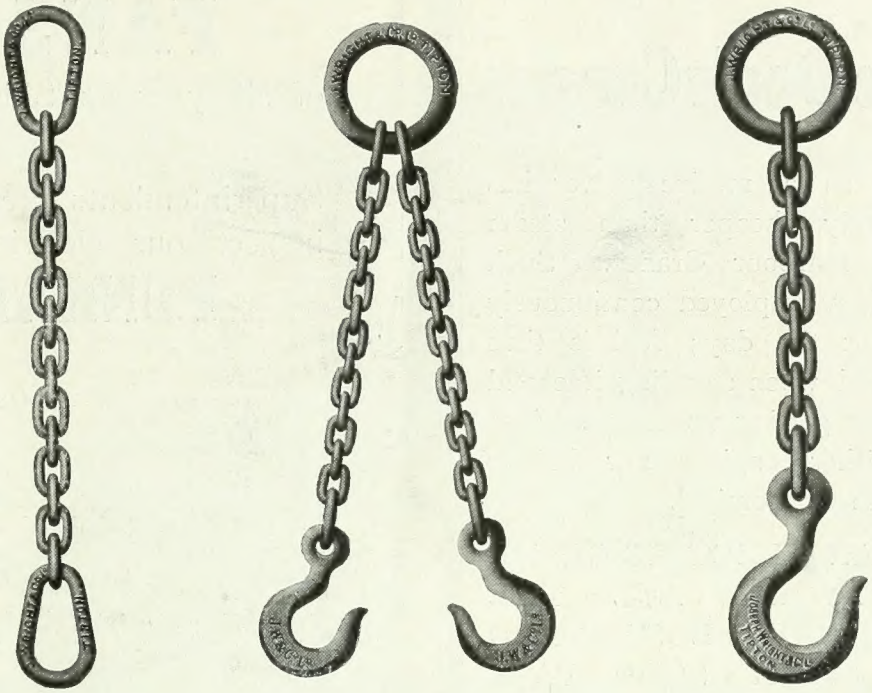

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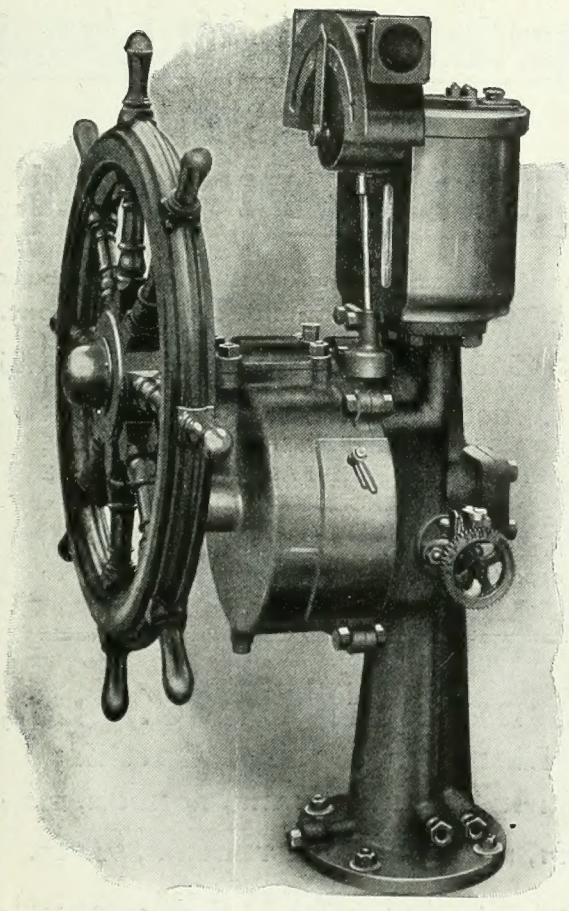

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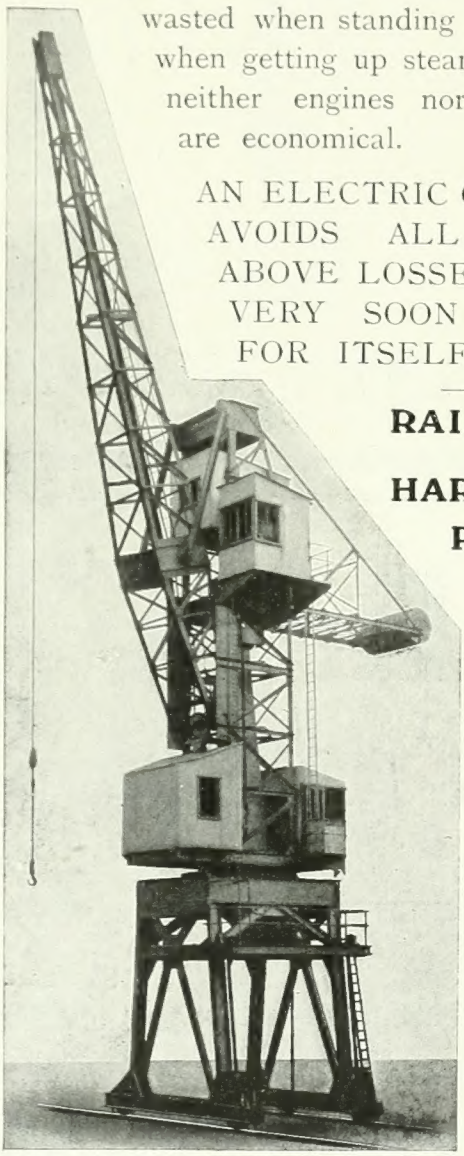

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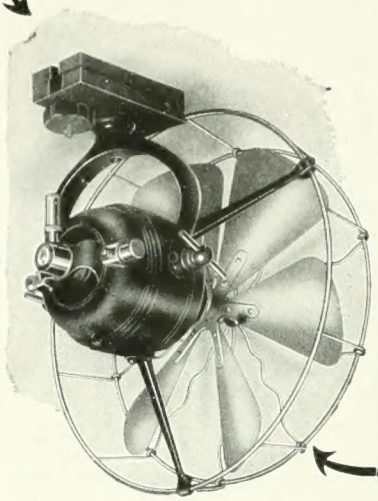

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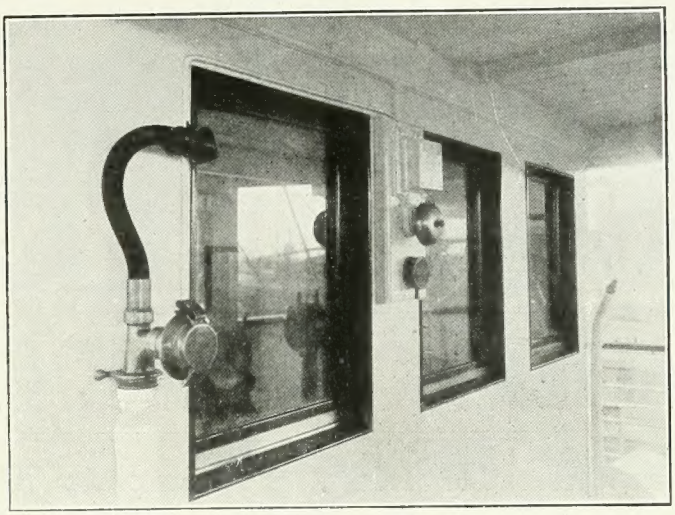

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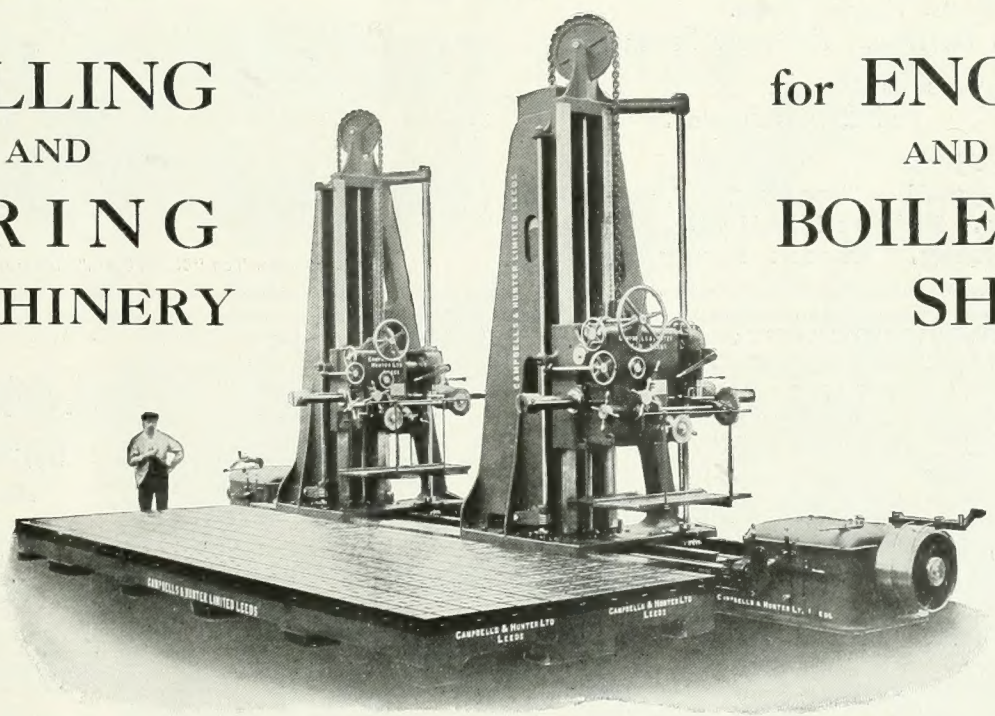

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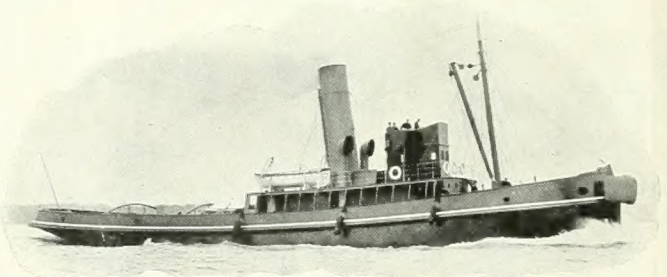

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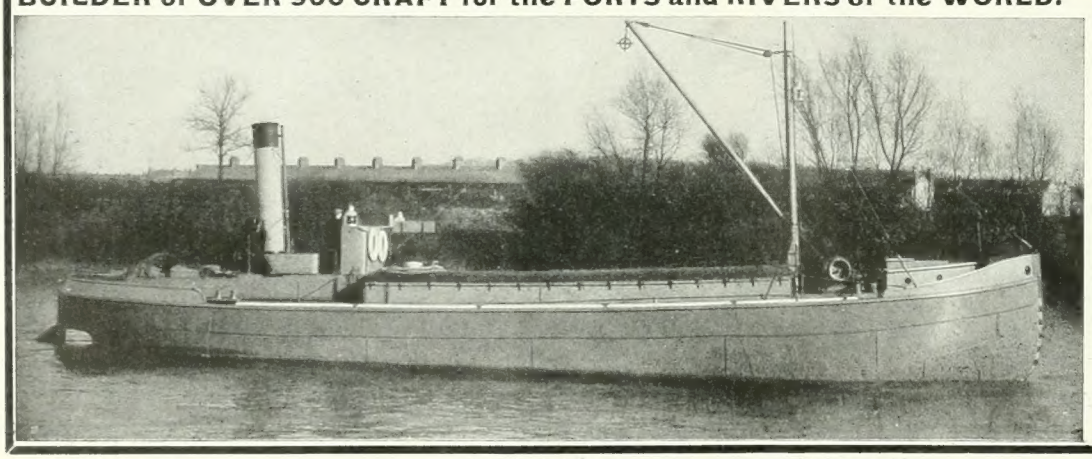

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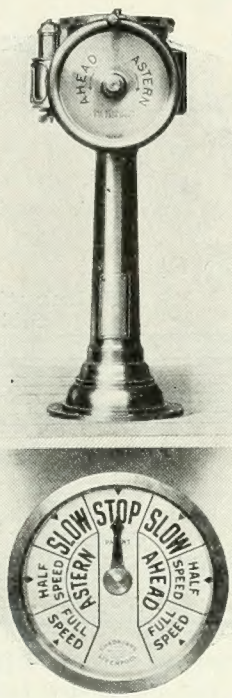

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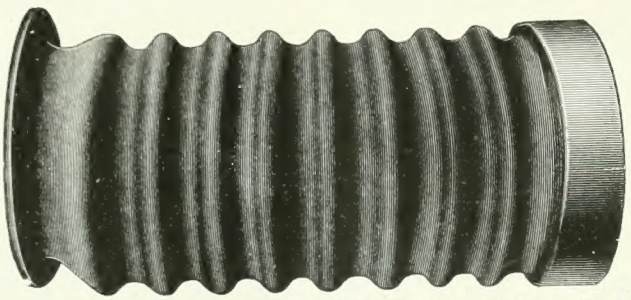

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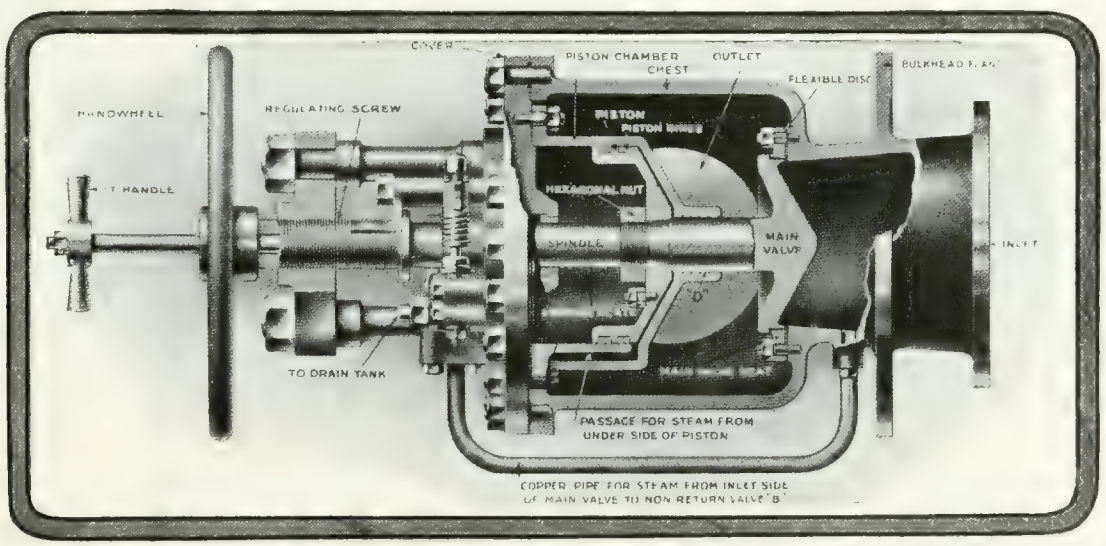

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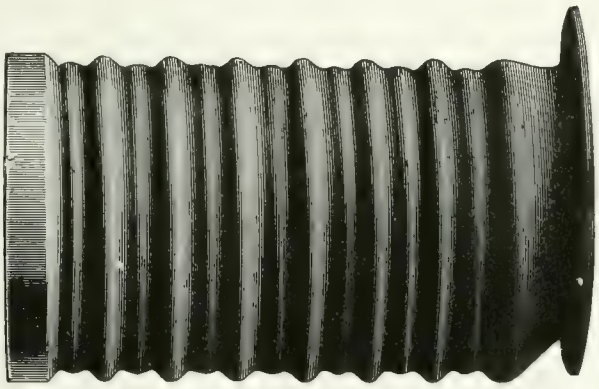

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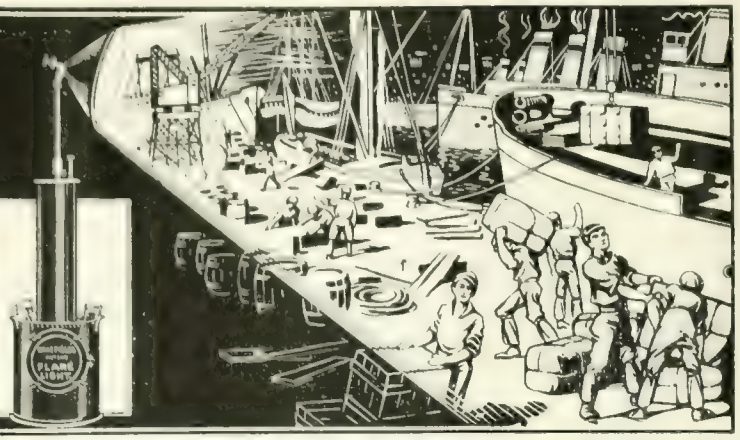

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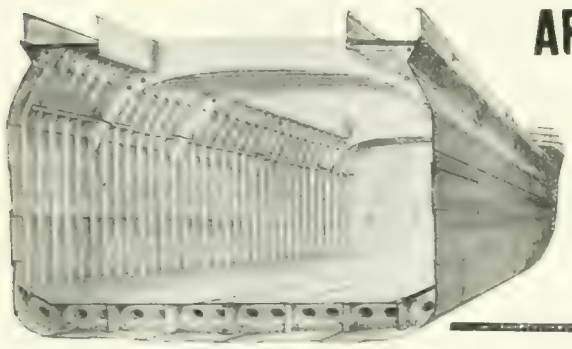

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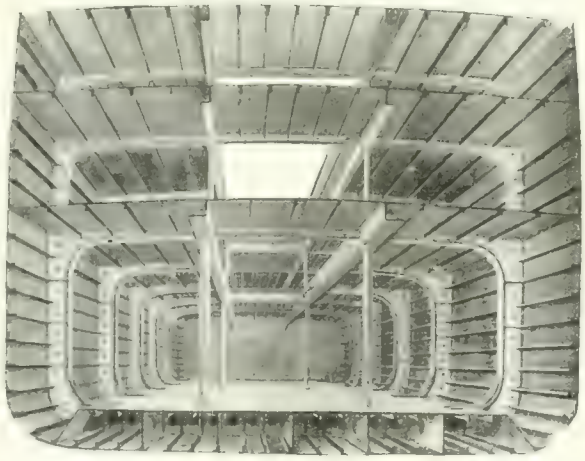

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CONTENTS.

EDITORIALS:
American Developments 289
Life-Saving Zeal 289
The Panama Canal Stoppage 289
Patriotic Production 289
American War Risks 290
February Renewals 290
Constructive Total Loss 290
War Profits and Shipping Values 290
Local Munitions Committees 290
War Badges 290
Twin Rudders 291
Inclining Experiments 291
Manganese Bronze 291
Electric Arc Welding 291
Oil Fuel Burner Design 291
Shipping and War Taxation 292
Longitudinal Subdivision 292
Testing Safety Valves on Naval Vessels 293
Publications Received 293

ILLUSTRATED:
Adriatic Passenger Vessels 298

MISCELLANEOUS:
Engineering Prospects in Russia .. 294
Grain Cargoes 295
Patriotic Production 296
German Fishing Companies 298
An Appeal for Seafaring Prisoners 302

STEAMSHIP APPLIANCES:
Central Slinging of Lifeboats from a Single Davit 299

GENERAL NEWS SECTION 301

OFFICIAL NOTICES AND SHIP SALES 311

SHIPPING SHARE MARKET 312

THERE appears to be a fairly confident expectation in shipping circles that the end of the war will also witness the cessation of American maritime enterprise, to a very large extent at all events. It is true that at present new steamship lines are being established in increasing number, but, so far as European trade is concerned, the tightening of the British blockade is causing a good deal of anxiety to the few companies that have been formed for the purpose of carrying goods to Holland and Scandinavia. As a matter of fact, one concern is already, we hear, in liquidation, owing to the heavy demurrage charges incurred as a result of the holding up of its steamers by British warships. In consequence of this vigilance, American underwriters are quoting about 7 guineas per cent. against the risk of the detention of shipments to Sweden. The Great Northern Company has, we understand, definitely decided to follow the example of the Pacific Mail and withdraw from the transpacific service, and, indeed, it is said that the *Minnesota*, one of its two fine liners, has been sold to a London firm. Meanwhile, the Seamen's Act, which is responsible for this trouble, is still being interpreted against the views of its promoters by the United States Attorney-General. The other week we quoted his opinion to the effect that Section 14 of the measure does not apply to the vessels of countries that have ratified the International Convention on Safety of Life at Sea, and now we hear that he is doubtful about the application of Section 4, which provides that seamen shall receive one-half the pay due to them at each American port the vessel touches, to foreign ships. Another interesting development is the formation of a Chinese shipping company, partly with American capital. In fact, it is stated that Mr. Robert Dollar, the well-known owner, has transferred several of his steamers to the new concern, which will very soon be in a position to begin operations.

American Developments.

Just before the war the marine sections of what used to be known as the civilised nations beset themselves to solve the problem of the unsinkable ship and to devise better means for saving life at sea. America took a prominent part in the deliberations of the International Conference, and one of her delegates, it will be remembered, broke off negotiations and went home in a huff as he thought things were not going fast enough. We wonder what the gentleman now thinks of the Bureau of Navigation of his own country who recently fined an aviator $30 for not carrying life-saving equipment on his seaplane. It appears that the seaplane in question carries passengers over the water at Atlantic City and the grounds for official action were that it lands on the water occasionally. This from a country which allows a vessel like the *Eastland* to capsize in shallow water with the loss of hundreds of lives shows a remarkable awakening to a sense of duty.

Life-Saving Zeal.

The news which has been coming from the Panama Canal zone during the past few days relative to the landslides which have been a source of annoyance ever since the waterway was opened—and indeed before that—can only be described as serious for shipowners who have planned to use the Canal regularly; while the frequency of the landslides of late has falsified the hopes of those experts who imagined that on the completion of the Canal the weight of water therein would tend to exert sufficient pressure to minimise the frequency of the slides which had been giving considerable trouble during the work of construction. About the middle of last month, following slides of an intermittent character, it was stated that a serious slide had taken place and in the words of Lloyd's agent at Panama there was "no reasonable prospect of a passage being cleared for a few days." Subsequently it was hoped to be able to clear away the obstruction by September 30, although in the meantime some 50 ships were held up. A further slide occurred on September 29 and then it was officially announced that the Canal would be closed until about October 9. On Monday, Turner, Davidson & Co., Ltd., advised us that they had received a cable from Panama stating that the Canal would be closed until November 1, and this has since been confirmed by the American Consulate.

The Panama Canal Stoppage.

The British Association of Trade and Technical Journals has issued an appeal which urges the importance of foreign trade development both during and after the war. The appeal is printed on page 296. It is pointed out that industries which are not concerned with munitions can help to win and pay for the war by intensified production for the export trade. In all trades manufacturers should already consider plans for increasing their output and for securing more foreign orders. Great as Britain's international trade has been in the past, it must be raised above all previous records. Manufacturers, traders and workpeople are right to husband their resources, but if the country goes to work in the right spirit, whatever is prudently saved out of war earnings will be used for extension of foreign trade and not for insurance against loss of orders or wages. We must not destroy our malignant enemy only to sink into national exhaustion. Even the present time, when the energy and intelligence of the nation must be so largely utilised for the early overthrow of the enemy, should be regarded as the beginning of a new era of intensified patriotic production. All manufacturers and

Patriotic Production.

skilled workers who are not engaged in munition work should be making greater efforts than before to push their business abroad. Those who are turning out ammunition and supplies should already be planning foreign trade campaigns. The whole population should be united in the determination to limit home consumption and to increase production for customers overseas, to pay for the war by work instead of parting with property.

American War Risks.

The first annual report of Mr. William C. De Lanoy, Director of the United States Bureau of War Risk Insurance, which was established September 2, 1914, to write insurance on American ships and cargoes against the dangers of war shows that during the year policies were written on war risks aggregating £16,541,937. The total number of policies written was 1,245, or an average of above 100 a month. The total net premiums received by the Government amounted to £400,940. The losses paid aggregate £144,130, being for the *Evelyn*, the *Carib*, the *Greenbrier*, and the *William P. Frye*. A salvage of £5,046 has been received for the *Evelyn's* cotton, however, making the net losses £139,084. Further remittances are to come for salvage and these will further reduce the net losses. The net losses paid, deducted from the premiums received of £400,940, leave a surplus of premiums received of £261,854. The total expenses of organising the bureau, printing and stationery, including the salaries of the entire staff, amounted to £3,540 for the year. The amount appropriated for the expenses being £20,000, there remains a balance of £16,460. The possible outstanding claims are £20,000, and the total amount of insurance at risk on September 1 last, was £1,383,043.

February Renewals.

The renewal of insurances on steamers which date the inception of their policies from noon, February 20, are now coming under the consideration of Underwriters, and although for various reasons February is not the premium-earning month that it used to be, it still forms foundation of a year's "time" account. There is very little hope of any reduction in rates being accomplished this year. The high price of repairs and like considerations have affected the hull market to too great an extent for any concession in price to be allowed, while the new "15 per cent. disbursement clause" will be rigorously insisted upon. This does away with any reduction in value in the "all risks" policies. In fact the tendency of values is still upwards and further increases seem probable. The Institute warranties will remain the same, and vessels insured with warranties other than these will find some difficulty in retaining them if they are at all wide, the alternative being an increase in rate. Even under the most favourable circumstances we are afraid owners will have to face an increased insurance bill, while those engaged in hazardous trades will find the increase commensurate.

Constructive Total Loss.

Since writing about the *Carmelite* constructive total loss some weeks ago, another interesting case has come to light, though the circumstances in this case have a different bearing. The steamer *Woodbridge* which went ashore at Bude early in April this year was abandoned to underwriters who settled a total loss and sold the wreck as she lay for £15,000. Her insured value was £30,000, so that the underwriters bore the equivalent of a 50 per cent. loss plus the T.L.O. lines effected by the owners. The vessel was floated and repaired, and on being put up for sale fetched a first bid of £40,000, the price at which she was knocked down being £57,000. This is a very fine reward for the buyers of the wreck but it is rather rough on the previous owners, who were in no way compensated for the loss of their vessel by the insurance money. An interesting point in this connection is the fact that a week before the *Heindonhall* was floated, after being ashore in the St. Lawrence for a long period, the owners withdrew their letter of abandonment, while another steamer recently ashore and badly damaged has also been taken back by the owners after abandonment to underwriters.

War Profits and Shipping Values.

If the profits earned during the war by all shipowners are to be taxed—and we are told by the busybodies that they are—one of the first effects will be considerably to reduce what are called shipping values. Owners will be unable to give the prices which builders are obliged to quote, and the selling price of all secondhand tonnage will drop to an alarming extent. It is not to be unduly pessimistic to say so. Nor is it to inspire shipowners with an unpatriotic disinclination to bear their share of the Empire's war burden. We are simply expressing an economic fact. Why have owners paid the high prices they have paid for secondhand steamers, and why have they been agreeable to order new vessels on the terms which builders consider to be profitable? Simply because they felt that with freights at their present level they could earn as much during the prosperous period as would enable them to write down the book values of the purchases to profitable figures—figures, that is, on which they could hope to make a reasonable profit with the trading conditions normal. If the profits of all shipowning are to be deemed to be war profits and to be taxed accordingly they will not be able to do that. Sellers of secondhand boats will not suffer unreasonably, for they will have their vessels and be able profitably to employ them. But shipbuilders will, for with costs of materials and labour what they are they will be unable to get their prices low enough to attract work.

Local Munitions Committees.

A common complaint of the men in the important war work areas is that the local munitions committees are not being consulted as they ought to be regarding the transfers of skilled labour which are found to be necessary. The local representatives of the Ministry of Munitions are said to be acting not merely independently of the Committees but as if they did not exist. The matter was brought to the notice of the National Advisory Committee some time ago, and the decision that the Central Labour Supply Committee is to work in "complete co-operation" with the local munitions committees is, no doubt, a result of its action. It is, of course, true that without the co-operation of the trade unions the necessary transfers of skilled labour are practically impossible. Still, that is not to say that in ignoring them the local representatives of the Ministry of Munitions acted wrongly. Several of the local munitions committees very early in the reorganisation developed into debating societies which wrangled over irrelevant questions and made no, or at the best, very slow, progress with the work they were set up to do. That there will be an improvement when the local committees and the Central Committee are working in co-operation is possible. But it is not probable—unless the trade union representatives choose to forget that munitions committees are not local conferences, and to remember that their function is strictly limited by the terms of the reference to the Central Committee. They have nothing to do except to see that the available skilled labour is utilised to the greatest advantage of the State.

War Badges.

Our sympathies are with those officers and men of the merchant service who desire to wear war badges. We are glad that the Parliamentary Secretary to the Board of Trade admits that in principle they are as fully entitled to those marks of national service as are men employed on munition work. Their work in bringing supplies to this country is indispensable to the nation and is attended by greater perils than is the case with men in the workshops at home. Admitting all this, it is disappointing to find that difficulties of detail prevent the fulfilment of the wishes of this deserving class in the matter of war badges. The Government has properly decided that every care should be taken to prevent these metallic tokens of participation in war work passing to men not qualified to wear them. Mr. Pretyman in the House of Commons has pointed out

that one of the main difficulties lies in the coasting trade where the master of a vessel may engage a man merely for the voyage. If the badge were given to a man who had done two or three of these short trips, it is true in dangerous areas, he could scarcely be said to have earned his right to wear it. Such a man might be ready to part with it, perhaps for money. A system of this sort would lend itself to abuse. Crews of transports, colliers and other vessels doing Admiralty work receive the badges. We trust that it may not surpass the wit of the Board of Trade yet to devise some system whereby the officers and men of the merchant service who are in truth performing national work continuously may be provided with some visible mark to separate them from men who are not giving war service of any kind.

Twin Rudders.

In the merchant service twin rudders are not in common use, for only in exceptional cases can they be fitted. Their adoption is quite common, however, in warships. It has been found by model experiments that considerable differences in resistances are obtained with models fitted with different types of rudders. Mr. T. G. Owens gave the results of some such experiments, which had been carried out at his request, in his paper on "Some Questions Relating to Battleship Design." The resistance of a particular battleship with a large single rudder was found to be a little over 1 per cent. more than with no rudder at all. With twin rudders on the centre line over 2 per cent. more power was required, whilst with twin side rudders 7 per cent. more resistance was recorded. With regard to the tactical diameter of the turning circles of battleships fitted with a single centre-line rudder, it was found that these bore the same ratio to the length of the ships as did those of battleships of approximately the same dimensions having twin rudders whose combined areas much exceeded that of the single rudder. It has been found, in experimental work, that with twin centre-line rudders the forward one acts as a blanket on the turning effect of the after one, and that the total turning effect is not proportionate to the combined areas. The forward rudder, the smaller of the two, gives a certain result when tried alone, and when both are run in conjunction the turning effect produced by the single rudder is not greatly exceeded. A single rudder equal in area to the two gives a much better result. Certain considerations may make the adoption of twin rudders advisable, but from the point of view of resistance and diameter of tactical circle a large single rudder is preferable.

Inclining Experiments.

The accurate determination of the vertical position of the centre of gravity of a vessel is a matter of the utmost importance, as upon it depends the stability of a vessel both in the initial and greater angles of heel. By calculation this point may be found, but only with a very uncertain degree of accuracy owing to the difficulty of ascertaining the position of the centre of gravity of several of the items which make up the complete structure. Fortunately, by a very simple experiment, this point can be accurately determined, but it is possible to obtain anything but an accurate result, and the greatest care must be taken in finding the actual condition of the vessel during the experiments. An illustration of what may happen was given by Mr. Cannon at last year's meetings of the Institution of Naval Architects. Two sister ships which had been inclined showed a difference of 1 ft. in the height of the centre of gravity. It was, of course, impossible that this could be actually the case, and the explanation lay in the fact that the hawsers had not been made sufficiently slack to allow one of the vessels to heel freely when the weights were moved from one side of the ship to the other. The presence of loose water on board is a fruitful source of error, and it is essential that if any water tanks are in use that these should be completely filled or else emptied entirely. The experiment should also be made when the vessel is absolutely finished, but before cargo, coal, or stores are on board. Occasionally builders are anxious to know how the stability of a certain vessel is going to turn out, and have the experiment made before the ship is thoroughly complete and when there is a considerable amount of plant on board. A little patience would ensure greater accuracy being obtained when the vessel is nearer completion.

Manganese Bronze.

In a paper entitled "Manganese Bronze," contributed by Lieut. J. B. Rhodes, of the United States Navy, to the Journal of the American Society of Naval Engineers, the author states that the accumulation of a large quantity of miscellaneous non-ferrous scrap material has led to the careful study of the metallurgical problems connected with the successful use of such material for naval purposes. The accumulations consisted chiefly of turnings and trimmings and obsolete or defective castings of composition so doubtful that it was not considered advisable to use the materials directly in the production of castings. The scrap consisted of naval brass comprised of copper 62 per cent., zinc 37 per cent., and tin 1 per cent.; also cartridge case metal incorporating copper 68 per cent., zinc 31·6 per cent., and nickel 0·4 per cent.; there is also manganese bronze consisting of copper 59 per cent. and zinc 41 per cent. Of these materials, naval brass and cartridge case metal have been used in the manufacture of cast naval brass, but the demand for this has not been great enough to warrant retaining scrap in that alloy alone, and the necessity has, therefore, arisen to work out an economical and practical method of manufacturing manganese bronze ingots. The results of experiments during six months has shown that it is practicable to make high-grade ingots of this character in an oil-fired furnace of about 2 tons capacity. This has been accomplished in spite of the well-known prejudice against open flame furnaces in the manufacture of non-ferrous alloys.

Electric Arc Welding.

During the past year the New York navy yard has had electric welding done on the boilers of various ships. Certain defective castings have been welded and blow holes filled in others, whilst miscellaneous repair work has also been done with the various machines under test. Additional uses are being developed as the advantages of this method become better known, and, as is stated in a paper on the subject by Lieut. C. S. McDowell, of the United States navy, appearing in the most recent issue of the Journal of the American Society of Naval Engineers, a large saving in cost over other methods of repair have been effected on boiler repairs in addition to a saving in time, notwithstanding the large profit which the outside contractors have made on the job. A specific application of arc welding is in the making of high-speed tools, part of the tool being made of ordinary steel while high-speed tool steel is used for the cutting edge only. The number of purposes to which the system has been applied at the navy yard is a large one, including the welding of end frames, and also a considerable amount of work on tanks and castings, whilst the building up of stripped gears and the welding of plates in lieu of riveting are other applications of the same principle. Electric arc welding is considered especially applicable for use on ship board for emergency repairs of all sorts. In the course of his paper the author says that the British cruiser *Glasgow* put into Rio de Janeiro after the battle off Chile and effected certain repairs with an arc welding set that happened to be there, putting to sea again in 24 hours with the arc welding set on board.

Oil Fuel Burner Design.

Some interesting remarks appeared in the pages of our contemporary, *The Practical Engineer*, recently on the subject of oil as fuel in steam and internal-combustion engines. The internal-combustion engines used on launches and lighters abroad are heavy oil engines of the high compression or ordinary type paraffin oil and petrol engines. The supply of heavy or crude oil limits the use of the first type to certain districts. The supply of coal is so well organised that the necessary fuel can be

purchased almost anywhere by the sack or the ton, but this is not yet the case with the crude oil industry. Where this is very cheap, as, for instance, in Sumatra, it may be decided to use it under the boilers for raising steam, in preference to using it in an internal-combustion engine, and the fact that many engineers on the Sumatra oilfields prefer to use the crude oil under the boiler instead of employing the internal-combustion engine is significant. On these oilfields a home-made burner has been used with excellent results. It consists of two pieces of pipe about 3 in. in diam., the one a fairly close turned fit in the other, and this fit having been accomplished, the inner tube is put back in the lathe, a very heavy speed put on, and six light cuts taken with a finishing tool, six extremely shallow spirals being formed. The outer and inner tubes are then screwed into a special form of nut, and the oil introduced under pressure through the side of the nut into the space between the tubes shoots out into the furnace in the form of an infinitely thin hollow spiral. The air rushing through the centre of the inner tube mixes intimately with the oil, and the result is a large and remarkably even flame all round the furnace.

SHIPPING AND WAR TAXATION.

MR. McKENNA, the Chancellor of the Exchequer, we take it is ready to hear the case which the shipping industry has for relief of the burden which the excess profits tax would place on its natural development. He has expressed his willingness to examine in private the circumstances of any particular business which members of the House of Commons may think desirable to bring to his notice during the current week, and if they convince him that exceptionally grave consequences would follow in the train of the imposition of the tax on that business, he would naturally make adjustments in the text of the Finance Bill. To the mere argument that on general principles an excess profits tax is inadvisable, we believe that the Chancellor of the Exchequer will turn a deaf ear. We assume that from his speech on the subject in the House of Commons on Thursday last. What he will listen to are specific cases of hardship, exceptional circumstances, particular difficulties. We cannot forecast whether the accumulation of exceptional considerations and difficulties with which shipping finance is faced will or will not move his mind to relent before placing crushing burdens on the industry—burdens which will check its expansion in the future. A Chancellor of the Exchequer in search of money is an implacable individual, and Mr. McKenna has the iron hand although it wears the velvet glove. For reasons we have set forth in our recent issues we think that an overwhelming case exists for relaxation in regard to shipping. Its operations have been subject to severe dislocations. Ships at present can scarcely be replaced, and if replaced it is only at a vastly enhanced capital outlay. At all times it has been an industry subject to great fluctuations of profit, and in fixing a datum line for the tax anomalies will certainly arise. Moreover there is the supreme necessity to accumulate the reserves through which alone this great national industry may maintain and expand our trade after the war. Agriculture is not to be subject to the excess profits tax. Why then shipping? As Mr. Houston, whose excellent work in bringing the difficulties of shipping before the House of Commons is deserving of very high recognition, points out, it is only through our merchantmen that the food supply of this country has been maintained. Shipping as well as agriculture has fed the nation. Why impose a special tax on shipping and leave agriculture untouched? We think Mr. Howard Houlder in his speech at the meeting of the Mitre Shipping Company on Tuesday and which we report on page 306 summed up this argument conclusively when he described agriculture as second in importance to shipping upon which this country is more dependent for its food supplies. He also succinctly stated the argument against insufficient allowances for depreciation on account of the increased costs of replenishing one's fleet. His reference to the Government's appreciation of the economic difficulties surrounding the complex business of shipowning is reassuring and we trust that it has not been misplaced.

LONGITUDINAL SUBDIVISION.

AFTER the *Titanic* disaster many articles were written by competent writers advocating the adoption of some system of longitudinal subdivision. The peculiar nature of the accident which caused the loss of that noble ship rendered an efficient system of transverse subdivision of no avail. It was considered that if that vessel had had an inner skin she would have survived the ripping blow which laid so much of her open to the inrush of the sea. The subdivision of ships has been directed by the experience of the past, and each fresh disaster brings new light to bear on the imperfections of present-day methods of affording safety. Those who know most about the subject realise the tremendous difficulties which lie in the way of affording really efficient subdivision, but there are those who criticise severely "the tinkering of the so-called experts" and who have the solution of the subdivision problem ready for the acceptance of benighted shipbuilders. Those who know least about the subject are the most severe in their criticism. It must be admitted that the perfectly subdivided ship has not yet appeared, and that no vessel, however well built, is immune from disaster. Those responsible for the construction of large ships consider to the best of their ability, and in the light of experience, the nature of any probable accident, and design the vessel to meet successfully these contingencies. For the first time in the history of navigation merchant ships have been subjected to determined torpedo attack, and because the *Lusitania* did not successfully stand up to such, the subdivision of this vessel has been severely criticised.

It was freely stated at the time of the *Titanic* disaster that had that vessel been subdivided on the same system as the *Lusitania* she would not have foundered, and now it is stated that if the *Lusitania* had had transverse bulkheads only, she might have survived the torpedo attack of the U boat. Prof. Hovgaard, an acknowledged authority, has contributed to our contemporary, *Engineering*, an article setting forth his ideas as to the dangers of longitudinal subdivision. In this he says "It may be asserted, therefore, that longitudinal bulkheads as fitted in the *Lusitania* constitute a real danger and that all and any longitudinal walls are, as such, objectionable because they, in case of flooding of the side compartments which they form, must produce transverse inclination." It may be stated, with perfect truth, that there was up till recently, no stronger advocate of longitudinal subdivision than Prof. Hovgaard. The professor contributed to the discussion on a paper read by Dr. Bruhn before the Institution of Engineers and Shipbuilders in Scotland three years ago. In this contribution he said: "Abreast of all large compartments, engine rooms, boiler rooms, and the largest hold spaces, a wing passage bulkhead should be fitted on each side at a distance of about 6 ft. from the outer shell. . . . In compartments where watertight side bunker bulkheads were fitted, the wing bulkheads might be dispensed with." Now this was exactly the type of subdivision afforded the *Lusitania*. Since Prof. Hovgaard wrote the above much has happened. The *Empress of Ireland*, the *Cap Trafalgar* and the *Lusitania* have all heeled over during sinking, and there seems to be a strong case against longitudinal subdivision. That may be so, but it cannot be proved that any of these ships would have survived had transverse subdivision only been adopted. The existence of wing compartments has doubtless caused an instantaneous and decided heel, and made difficult the launching of boats, but in at least two of the above cases, owing to the nature of the damage inflicted, longitudinal bulkheads had no chance to be of the use intended, namely, "the preventing of water from reaching the internal spaces and thus serve to maintain the working efficiency of boilers, engines,

and other important elements in the ship." Prof. Hovgaard commences by saying that "according to the findings of Lord Mersey the *Lusitania* was hit by one torpedo on the starboard side abreast of the forward part of No. 4 boiler room, another torpedo is believed to have struck immediately after the first on the same side of the ship and probably in the same region." The report distinctly said that the vessel was struck by two torpedoes and the second is supposed to have struck at a spot about 150 ft. forward of where the first torpedo entered the ship. On the assumption that only one torpedo hit the vessel, and that in the region of No. 4 boiler room, Prof. Hovgaard asserts that the presence of free water in two adjacent wing compartments, in the lower deck space immediately above and in the boiler room itself, would give to the ship a list of at least 20 deg. This finding assumes that Prof. Hovgaard knew the condition of the ship when she was attacked as regards the height of the vertical centre of gravity, and that he also knew the righting arm of the ship at considerable angles of heel. It is safe to say that this knowledge was not his. The heeling effect produced by the damage indicated in the actual condition of the ship at the time would have been considerably less than that stated, and the actual heel given was obtained because a much greater length was bilged than he suggests. The explosion of the torpedo between Nos. 3 and 4 boiler rooms would open these up to the inrush of waters, and that of the second torpedo still further forward would lay open No. 2 boiler room and probably No. 1 also. It is undoubtedly the case that a very large portion of the ship's length was bilged, and whilst it may be granted that the bilging of the wing compartments did produce an inclination, it is still to be proved that "this heel contributed to and perhaps directly caused the loss of the ship." Part of the loss of life was doubtless due to the difficulty of launching the boats, and from this point of view there is a danger in longitudinal subdivision. The safety of the ship was aimed at by the subdivision adopted, but the internal bilging of the vessel to a much greater extent than her floodable length caused this to be useless.

TESTING SAFETY VALVES ON NAVAL VESSELS.

A PAPER entitled "Method of Testing Safety Valves at the U.S. Naval Experiment Station" was contributed by Ensign L. R. Ford, of the United States navy, to the latest issue of the Journal of the American Society of Naval Engineers. The object of most safety-valve tests made at the United States Naval Experiment Station is to determine whether the valves purchased for installation on naval vessels fulfill the requirements of the specifications which they have to meet. During the progress of the tests data are obtained that often prove of value in preparing new specifications and improving existing designs.

After certain other tests have been completed those for determining the capacity of the valves are made. The valve is allowed to blow continuously for one, or sometimes two hours. A measure of the weight of steam discharged by the valve is obtained by measuring the water fed to the boiler, since there are no outlets for steam from the boiler, other than through the valve, the feed pump being operated by steam from another boiler. The water is measured by the drop of water level in a calibrated feed tank. The water level in the boiler is noted at the same instant as in the feed tank. In this reading of the water level in the boiler lies the greatest source of error in the test. The level is read from a gauge glass at the end of the drum farthest removed ffom the steam nozzle in order to get a minimum of fluctuation of level, but it is possible to make an error of $\frac{1}{8}$ in. in the readings. If the errors at the beginning and end of a run cancel each other there will be no error in the total discharge, but if the errors are additive, it will introduce an error of $\frac{1}{4}$ in. in the drum water level, equivalent to about 65 lb. in the total discharge. If the valve under test is small enough for the discharge to be handled by the condenser an accurate measure of the discharge is obtained by weighing the condensed steam. This cannot be done, however, if the pressure in the discharge chamber of the safety valve is above atmospheric pressure, because there will be a leakage of steam from the casing. When the discharge pressure is below atmospheric pressure the condensed steam and the entering feed are both weighed, one being a check on the other. The quality of the steam discharging through the valve is determined by means of a throttling calorimeter. The sampling pipe of the calorimeter projects about $\frac{1}{2}$ in. into the steam current. The discharge pipe is run to the bottom of a tank of cold water, mounted on platform scales, so that the amount of water discharged by the calorimeter can be measured. To make the capacity run the number of burners in operation is increased until the valve remains open at the desired lift. This lift is maintained very close to the desired valve by regulating one burner under the boiler, by signals to the fireman. When the conditions become constant the run is started, the steam pressure and valve lift being read at 1-minute intervals, while the feed-tank level, boiler-drum water level, calorimeter pressure, and temperature and safety-valve casing pressure are noted at 5-minute intervals. Popping pressure and blow-down observations are made just before and just after each run.

To provide against the introduction into the weight of steam discharged of an error due to leaks around the boiler and its fittings, a leakage test, of the same duration as the capacity test, is made, after the capacity test has been completed. The feed pump is shut down and enough fire is maintained in the furnace to keep the same steam pressure in the boiler as was used in the capacity test. At frequent intervals the level of the water in the boiler is read and at the end of the test these readings are plotted. Since the boiler used is very tight, the curve usually droops off very slightly at the start and then remains a straight line for the rest of the test.

A platform of metal grating, built level with the top of the drum, serves as a working platform for the observers. Ventilation is provided by an air duct from the forced draught blowers, discharging above the level of the working platform. Mounted on the top of the uptake, within easy reach from the operating platform, are switches for signalling to the fireman. Electric lights mounted within view of the fireman are operated by these switches, and indicate to the fireman when the pressure is to be raised or lowered.

All the instruments used for the capacity, lift and blow-down observations are carefully calibrated and calibration sheets made out, to be used in the final calculations.

PUBLICATIONS RECEIVED.

The Strength of Materials. By Ewart S. Andrews, B.Sc.Eng.(Lond.). London, 1915: Chapman & Hall, Ltd., 11, Henrietta Street, W.C. $8\frac{1}{2}$ in. $\times$ $5\frac{1}{2}$ in. $\times$ $1\frac{1}{8}$ in. 604 pages, 264 illustrations. Cloth, 10s. 6d. net.

Mr. Andrews is a member of the Concrete Institute, a lecturer on engineering, past and present, at several colleges and institutes, and he has written six books on subjects cognate to the present volume. This is intended as a text-book for engineers and architects in general and especially for students reading for the Assoc. M.Inst.C.E.; many tables and diagrams have been introduced as aids to the application of the formulæ. There are 20 chapters and 34 exercises in all referring to the subjects in each chapter. There is also an index, which might well be amplified in the future editions which, undoubtedly, will be issued, as it practically only repeats in alphabetical order the table of contents. We have looked in vain for any mention of flywheels as such, or Vicat's needle for testing cement, or the falling weight and the steel ball tests for rails. The author, in the preface, candidly remarks that "nearly all engineering formulæ are only approximately correct . . . because there is no material known which conforms exactly to the simple laws of elasticity upon which the subject is based. . . . It is essential not to attempt to express our results to a greater degree of accuracy than the nature of the problem will allow." Various testing machines and apparatus are fully described; the author is evidently not very fond of practical tests, like the bending of cold bars, as "the results are rather negative." The book is well got up in every respect and will be found useful to anyone wishing to study the theory of the stresses in any particular application of constructional material.

ENGINEERING PROSPECTS IN RUSSIA.*

In the search for a new market it is desirable to look first to those countries which lie close to hand. The reason for this is obvious, as all costs connected with the transport of goods to them are so much reduced. Freight is usually less, correspondence takes a shorter time to pass between the contracting parties, and under certain circumstances the payment for the goods is made in a shorter time, all of which help to facilitate trade. Should bad debts unfortunately be contracted it is a simpler matter for a principal to attend to their recovery in person at comparatively small cost. Principals may make a business trip among their customers at more frequent intervals without absenting themselves for too long a period from the chief scene of their activities. In other words, it is easier to keep in touch with one's customers and their requirements, without losing touch with the general course of office and works production.

As engineers, we are naturally most interested in machinery, and by applying the foregoing rules let us see if there are any markets which might be worth capturing and cultivating. It must be remembered that the times are abnormal just now, and two large competitors are cut off from exporting, in many cases, thanks to our navy. Of all the countries in Europe, the one which is most undeveloped, but which has most scope for future development is, undoubtedly, Russia. Russia is near to us geographically in normal times; being a developing country there is bound to be a demand for engineering manufactures.

The question before us is, "How, after the conclusion of peace, will Russo-German trade be changed?" There is no doubt that Germany will put forward superhuman efforts to re-establish her connections. Her merchants will but increase their proverbial pushfulness to overcome the temporary aversion to German goods. It is for the British merchant to take advantage of the opportunity to wrest the Russian trade from Germany, and while it is possible that he will be assisted by facilities from the Russian Government in the shape of preferential customs' treatment, yet this preferential treatment will hardly be sufficient in itself to assure the sale of British manufactures in Russia to the extent which is warranted by the relative capabilities of England and Germany to supply the Russian market.

British merchants and manufacturers will have to become less conservative in their business methods and profit by the lessons of Germany's progress, a progress largely based on credit terms, which the Russian buyers expect and obtain, and a free use of commercial travellers who speak Russian. There is no need to overlook the fact that a great incentive to Anglo-Russian trade would be given by an alteration in the Russian commercial law according greater security for industrial enterprises and capital investments. Business with Russia is as safe as with any other country provided the usual business precautions are taken.

There are a number of points which need to be inculcated in connection with any attempt to capture the Russian markets, some of which are peculiar to the country. In the first place, matters should be put in hand immediately. Great Britain is not the only nation which has covetous eyes upon Germany's lost heritage in the East; Americans, Scandinavians, and our Allies in the field are all watching keenly and organising their resources to meet any and every demand. Secondly, Germany's commercial success in Russia, as in other countries, has been secured with the aid and co-operation of the hundreds of thousands of German settlers in that country to whom the Government at Berlin has wisely granted every facility for retaining their nationality and keeping in touch with business circles at home. Added to this, there is the need for a better British consular service in order that the nation's foreign trade interest may be properly supervised, this being a question which demands greater consideration with regard to Russia than perhaps any other country.

If any considerable portion of Germany and Austria's trade is to be diverted into British channels, manufacturers and merchants in this country will have to alter their methods to suit the Russian market. This is a point which cannot be too strongly insisted upon. First, catalogues and price lists must be printed in the Russian language; weights and measures must be in familiar units, preferably Russian; prices should be for the goods delivered in Russia. Secondly, conditions of payment must be such as will suit the Russian. Bankers and merchants all concurred in the view that credit was one of the chief points which would require special treatment by this country in a trade campaign. Germany began her business invasion by sending travellers who were conversant, not only with the language of the country, but with the business methods. The latter are so different from those which obtain in this country, that a special study of these methods and conditions should be made by all who contemplate doing business with Russia. If this is not done and the demands of the market are not met, then the huge trade and all that it means to us will revert to Germany, or be captured by America. Germany, in opening up trade, allowed the Russian merchant long credit, even up to three years in some cases. The terms of sale were sometimes immediate delivery of the machine and payment was to be made when the Russian manufacturer was able. One of the Russian peculiarities of character is the dislike to pay even when perfectly able to meet liabilities. This is a fact which British merchants have not grasped hitherto, that the Russian merchant may put off paying, not because he is insolvent but because he "can't be bothered" at the time payment is due. He does not realise, as the British merchant does, that by putting off payment he will really have to pay more indirectly for his goods, and that his power for future buying on credit may be impaired. After some years of long credit, Germany reduced the terms of payment from three years to two and a half or two years, then down to two years or one and a half, and latterly the time was further reduced to from six months to one year. British merchants will, after the war, require to adopt some similar method, only they will have the benefit of the education which Germany has given, and will have to start more or less where Germany left off.

Whilst Britain will have to alter her methods, Russia will also require to put her house in order. For instance, the bankruptcy laws of Russia are exceedingly lax and leave many loopholes for fraudulent bankruptcy. Thus, if a firm becomes seriously involved financially, it is possible to sell the business nominally to a clerk in the business, and by making a slight alteration in the name of the firm, to carry on the business free from all its old liabilities.

The position of limited companies in Russia is very obscure. Everyone in Britain is more or less familiar with the position of limited companies, and if not, it is an easy matter to consult a solicitor who will be able to state definitely the exact position; but in Russia the laws are so obscure and inadequate that it is difficult to know where one stands. All countries have certain restrictions governing the operation of foreign companies trading within its borders, but in Russia these restrictions are more numerous than in most others. In the event of a company being formed in Britain to manufacture in Russia, it must apply for Imperial confirmation before commencing its operations.

While there are difficulties in Russia to be overcome, there is also a great reward awaiting those who, having entered the arena and overcome the initial difficulties, persevere to a successful finish. The one determining factor which this country lacks now and must endeavour to cultivate is commercial organisation. British manufacturers are sometimes blamed for lack of enterprise and initiative. This is one of these assertions which seems to be true but which really is more false than true. After all, most men are in business to make money, and not to conduct a philanthropic society for supplying goods to foreigners under cost price. Enterprise and initiative may manifest themselves in many different ways. They

* Abstract of an address delivered by Mr. James Anderson at a meeting of the Institute of Marine Engineers, London, on Tuesday.

may take the form of standardisation of manufacture and the installation of special machinery which enables one particular class of an article of standard design to be turned out at a minimum of cost. If the manufacturer of this standard article is asked to make something which departs from the standard in one or two small details, the whole system of manufacturing and costing is thrown into confusion; the result is this, that as a large manufacturer, so long as he is able to keep his plant fully employed on standard work, does not care to alter his designs to suit what may be but a small trial order from abroad. The small manufacturer is not so fastidious. He cannot as a rule lay down expensive machinery specially adapted to turn out some one or two special articles at a minimum of cost. The reason for this is that, as a rule, he does not know when he starts out to manufacture, along what line his business will develop. Again, the large manufacturer has money to spend on travellers' salaries, newspaper advertising, and other selling plans; consequently his manufactures become spread over a wide area, and by their wide sales help still further to advertise his wares, so that if this manufacturer, say, of pressure gauges, which he manufactures in a standard design in polished brass cases, be asked to supply a similar gauge but in cast-iron cases, by some particular foreign customer, who has seen samples of his gauges, perhaps in some boiler installation which has been fitted up by a British firm, or perhaps because of an advertisement in some trade paper, or through a call made by one of the manufacturer's travellers, the reply which is sent to this foreigner's inquiry is usually that the manufacturer has no facilities for turning out an article which is a departure from the standard design, at a price which would compete with a similar article manufactured by some other firm, who having discovered the demand for this class of gauge, has put down machinery to meet the demand. This is a perfectly correct reply; new patterns would require to be made and might possibly never be used again. If piece work is the rule in the shop, new rates would have to be made out, and the probability is that the workmen who got the job to do would grumble, giving as a reason that they could make more money at the standard type, and this new department might even be the means of causing serious labour trouble in the works. The cost system would be upset and generally the trouble and inconvenience would be so great that unless the order was for a substantial number, and there was every possibility of a large and increasing trade eventually developing, the price quoted to the inquirer would be so high as to prevent the order being placed. The small manufacturer has few, if any, of these troubles. This is principally due to the fact that he is in close touch with all his workmen, and unfortunately, in many cases, has no elaborate system of keeping costs. He would be ready to do the work if he could get the inquiry, but unfortunately, his small production does not permit of a traveller's salary. He has to do what travelling is necessary, in and around his own district, when he can spare time from other important occupations. His advertising is limited to one or two papers, which have mostly an English reading public, and, finally, his wares are sold principally in the locality where his own personal connection commands sales, so that this form of advertising is also restricted. His large neighbour may send him the inquiry, but when his price is increased by the profit which his client and competitor adds on for the trouble and expense of securing the order, the matter is practically in the same position as in the previous case.

The question of whether it is better to have one large works employing, say, 1,000 men, or 10 smaller works employing 100 each, is one which is outside the scope of this paper, but it may be confidently asserted that there are greater opportunities for individualism and originality in the system which allows a greater number of small works to make headway. One thing at least is certain, that nine men have a chance of proving that they can earn their own livelihood and develop their businesses instead of being dependant on the organisation ability and originality of the tenth man.

GRAIN CARGOES.

The following amended Rule No. 14 of the Rules and Regulations of the Office of the Port Warden of the Harbour of Montreal has been approved by the Board of Trade, viz.:—

Amended Rule No. 14 of the Office of Port Warden of the Harbour of Montreal as Sanctioned by the Council of the Montreal Board of Trade, May 26, 1915.

14. *Limbers.*—The limber boards to be lifted, and limbers and water courses to the ship's pumps to be cleaned where necessary.

Ceiling.—The seams of ceiling over water ballast tanks will require to be made grain-tight by caulking or nailing ½ by 2-in. battens over them.

Flooring.—In all cases the cement between the frames above the ceiling must be examined and repaired if necessary, pump and other casings where passing through the ship's ceiling to be made grain-tight. When there is not the necessary depth of floor, a grain flooring will be required extending from the keelson to the turn of the bilge of 3 by 4-in. scantling, close boarded, edge to edge with two 1-in. boards breaking joints, and made grain-tight.

In vessels having water ballast tanks in Nos. 2 and 3 holds, the Port Warden in his discretion may grant a certificate and permit bulk grain to be loaded in Nos. 1 and 4 holds, provided that on examination the ship's ceiling in these holds is found to be dry and in good order, the seams caulked and made grain-tight.

The Port Warden may also at his discretion, in the case of vessels of modern construction with specially heavy ballast tank tops without wooden ceiling, grant certificates to load bulk grain, provided the bilges and water courses in the wings are sufficiently deep.

Shifting Boards.—Shifting boards must extend from the upper deck to the keelson when grain is carried in bulk. When grain is carried in bags the shifting boards must extend from deck to deck in the 'tween decks, and not less than 4 ft. downwards from the beams in the lower holds.

Shifting boards to be built of 2 or 3-in. planks laid close on edge, properly secured to the hold pillars, or shored every 8 ft. of length and 5 ft. of height of hold, the shores or braces to be 3 by 6 in. or 4 by 6 in., according to length, and firmly secured at both ends in the hatchways, the shores not to be further apart than 5 ft. of length of hatch. Filling pieces to be fitted between the beams where bulk grain is carried. Shifting boards to be fitted in the 'tween decks when grain or flour in bags is carried. A bulkhead is to be built if the forward hold is continuous between Nos. 1 and 2 hatches.

Feeders.—Grain carried in bulk must be supplied by proper feeders, or else secured by bags of grain or other cargo. Feeders to be constructed of 3 by 6 in. studding fitted inside of hatch coamings if possible, cleated at head and foot, boarded with two 1-in. boards on the inside of studding, shifting boards in centre to extend above bulk grain, and shored from side of feeders or hatch coamings; between deck scuttles to be used in supplementary feeders when practicable, the size of the box to be regulated by the Port Warden. Bunker hatches to be utilised as feeders when feasible.

The quantity of bulk grain in the feeders of single deck vessels must be at least 2½ per cent. of the quantity of the contents of the hold they feed, and, in vessels with more than one deck, not less than 3 per cent.

Single Deck Steamers with High Hatch Coamings Loading Full or Part Cargoes of Grain in Bulk.

The hatch coamings may be used as feeders, and must be of sufficient size to admit of not less than 2½ per cent. of the total grain in the hold being stowed within the coamings; otherwise the bulk grain must be secured by four heights of bags.

The hatch coamings must be properly supported by heavy iron cross beams, and fitted with fore and aft shifting boards.

The hatch coamings must be so placed that they are capable of feeding the centre and both ends of the holds.

Stowage.—Steamers having one deck and beams may carry bulk

grain to such a height as will permit the stowage over it of four heights of bagged grain, and where bagged grain or other cargo is used for securing the bulk grain, boards of 1 in. thickness must be laid closed edge to edge on athwartship bearers not more than 4 ft. apart on the bulk grain to prevent it shifting. The bulk grain must be well trimmed up between the beams and in the wings, and all spaces completely filled.

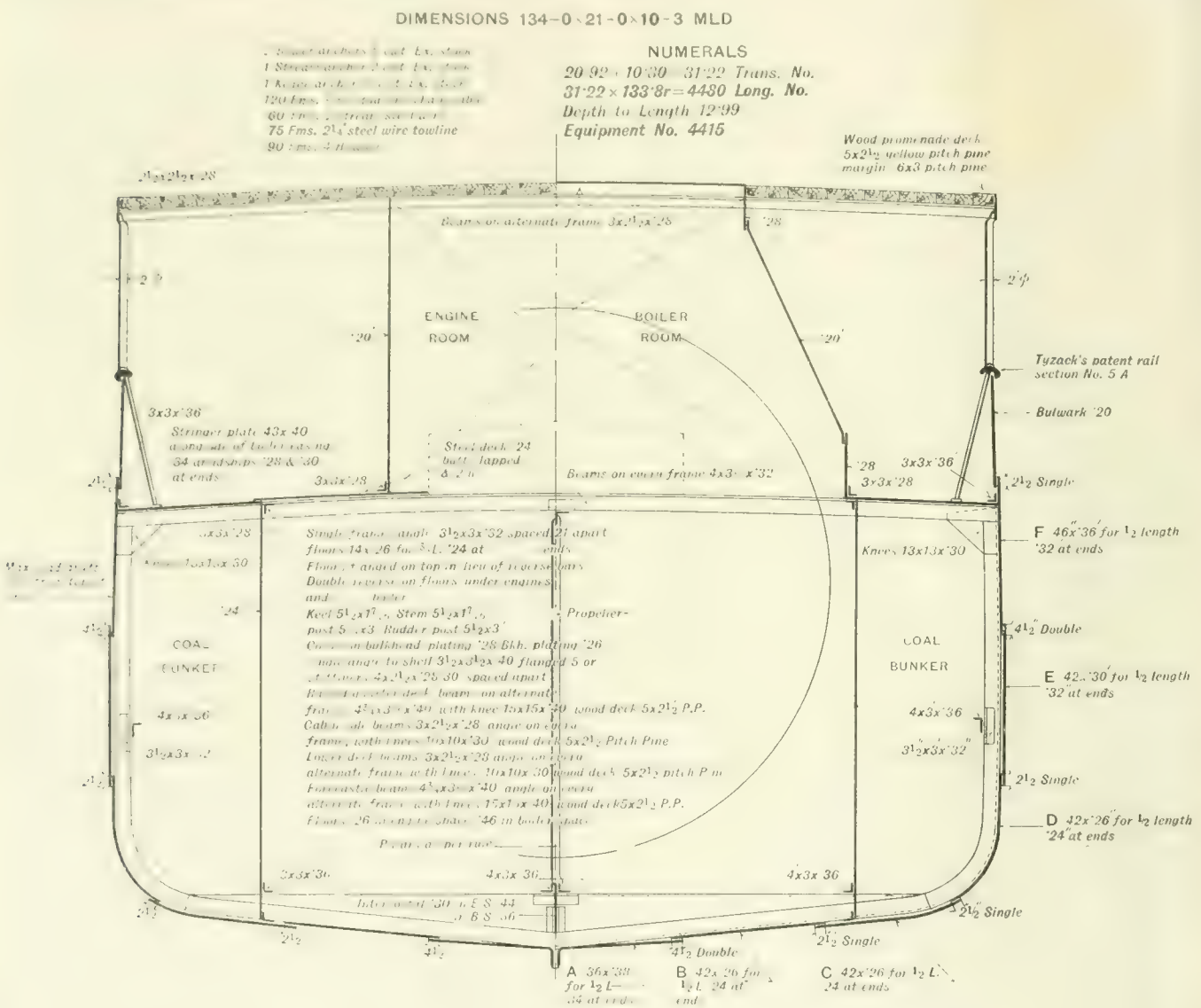
There shall not be carried between the decks, or if the ship has more than two decks, between the main and upper decks, any heavy grain in bulk, except such as may be necessary for feeding the cargo in the hold, and is carried in properly constructed feeders.

No vessel over 400 tons register unless a single-decked steamer

PATRIOTIC PRODUCTION.

It is gradually coming to be recognised throughout the community that war profits, war bonuses and war grants represent a wholly illusory indication of prosperity, and there are signs that all classes are giving more attention to economy, partly because they realise that the country is living largely on capital and partly because the market for many commodities is unfavourable to the buyer and gives clear warning of comparative scarcity.

Since a great war must necessarily decrease the wealth of a country, or at least seriously check its natural rate of increase, there are only two ways in which the population can overtake


DIMENSIONS 134-0×21-0×10-3 MLD
NUMERALS
20·92×10·30=31·22 Trans. No.
31·22×133·8r=4430 Long. No.
Depth to Length 12·99
Equipment No. 4415
75 Fms. 2¼" steel wire towline
Wood promenade deck 5x2½ yellow pitch pine margin 6x3 pitch pine
Beams on alternate frame 3x2½x·28
ENGINE ROOM
BOILER ROOM
Tyzack's patent rail section No. 5 A
Bulwark ·20
3x3x·36
Stringer plate 43x·40 along side of hatchways 34 at midships ·28 & ·30 at ends
Steel deck ·24 butt lapped
Beams on every frame 4x3x·32
3x3x·28
2½ Single
Single frames angle 3½x3x·32 spaced 21" apart
Floors 14x·26 for ½ L ·24 at ends
Double reverse on floors under engines and boiler
Keel 5½x1⅞ Stem 5½x1⅞ Propeller-post 5x·x3 Rudder post 5½x3
Knees 13x13x·30
F 46"x·36" for ½ length ·32 at ends
4½" Double
COAL BUNKER
E 42"x·30" for ½ length ·32 at ends
4x3x·36
3½x3x·32"
2½ Single
D 42"x·26" for ½ length ·24 at ends
Beams 3x2½x·28 angle on every frame, with knees 10x10x·30 wood deck 5x2½ Pitch Pine
Lower deck beams 3x2½x·28 angle on every alternate frame with knee 10x10x·30 wood deck 5x2½ pitch P.n
Forecastle beams 4½x3x·40 angle on every alternate frame with knee 15x10x·40 wood deck 5x2½ P.P.
Floors ·26 at engine space ·46 in boiler space
Partial bulkhead
Intercostal ·30 at E S 44 at B S ·56
2½ Single
A 36x·38 for ½ L— ·34 at ends
B 42x·26 for ½ L ·24 at end
C 42x·26 for ½ L ·24 at ends

SS. Monfalcone. Midship Section. (*See page* 298.)

having high hatch coamings as above described, shall be permitted to load an entire cargo of grain in bulk, oats excepted.

Oats may be carried in bulk to any extent, irrespective of tonnage of the ship, but subject to such regulations with reference to dunnage, lining and shifting boards as the Port Warden may prescribe.

The master shall inform the Port Warden of the quantity of bunker coal his vessel may require to take in after leaving this port, so that due allowance may be made when the freeboard is given. The freeboard of all vessels to be regulated by the Port Warden, but the freeboard is never to be less than that assigned under the provisions of the Imperial Merchant Shipping Act, 1894.

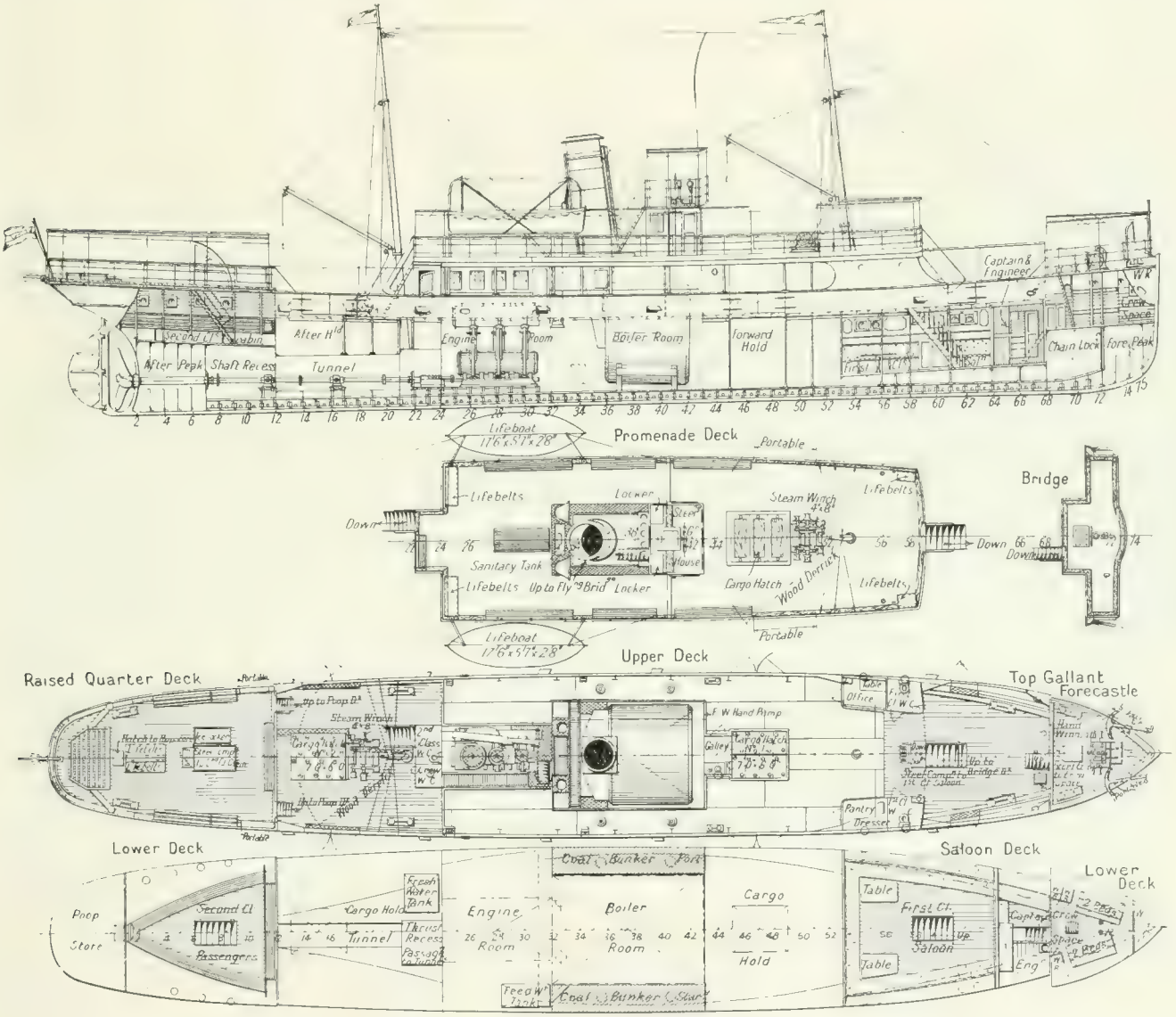
This amended Rule should be substituted for Rule 14 on pages 31-33 of the Memorandum relating to Grain Cargoes, 1914.

this deficiency: by closer economy in consumption and by greater industry in production.

The patriotic duty of the community is to earn more and spend less. It is impossible during the war for the industrial population in the aggregate to earn more, because it is so largely enlisted in the fighting forces or in the munition factories. Therefore our exports are diminished, while our imports are increased, and for many million pounds' worth of what we are buying from abroad we can only pay out of our savings, instead of our income. This balance of trade against us mounts by millions month by month, and unless it is sooner or later counteracted by increased production for export it represents in greater or less degree a permanent impoverishment of the country.

Industries that are not concerned with munitions can none the less help to win and pay for the war by intensified production for the export trade. What they can sell abroad brings in return supplies for our army and navy and our civilian population.

In all trades manufacturers should already consider plans for increasing their output and for securing more foreign orders. Great as Britain's international trade has been in the past, it must be raised above all previous records. The factory owner who has in the past been satisfied with a certain level of business and profit will be expected to put forth greater exertions for the sake of the national welfare. The labour that has been diverted from domestic or from unproductive employment to munition work should remain right to husband their resources, but if the country goes to work in the right spirit, whatever is prudently saved out of war earnings will be used for extension of foreign trade, and not for insurance against loss of orders or wages. The patriotic energy and devotion which have enabled Britain to put forth the mightiest military effort in her history will carry her through the critical period which must follow. We are not going to destroy our malignant enemy only to sink into national exhaustion. If the industrial community addresses itself to the problems of peace in a spirit of practical optimism the admired progress of the 19th century may yet be outshone by the growth of the power and prosperity of the British Empire in the 20th.



Adriatic Passenger Steamship "Monfalcone." General Arrangement. (*See page* 298.)

in the factories to swell the output and earn the country's living. The men returning from the trenches must be found work to do, for their own sakes and for the sake of the commonwealth. Many people hitherto belonging to the leisured classes will have to engage in agricultural or manufacturing commerce. The United Kingdom will need to be busier and thriftier than ever, or else will suffer grievously from the heavy cost of the war for many years to come.

There are manufacturers, traders and workpeople who are apprehensive in regard to the future and whose intention is to take full advantage of the present flood of public expenditure as a means of providing against hard times when peace returns. They are

This time then, even when the energy and intelligence of the nation must be so largely utilised for the early overthrow of the enemy, this time should be regarded as the beginning of a new era of intensified patriotic production in the United Kingdom. All manufacturers and skilled workers who are not engaged in munition work should be making greater efforts than ever before to push their business abroad. All who are turning out ammunition and supplies should be already planning foreign trade campaigns. The whole population should be united in the determination to limit home consumption and to increase production for customers overseas, to pay for the war by work instead of parting with property.

ADRIATIC PASSENGER VESSELS.

One of the effects of the war following the re-arrangement of political boundaries in the Near East resulting from the operations in the Dardanelles, and more particularly the addition to the Italian seaboard of a larger portion of the Adriatic coast, will be an increase in shipping in that sea. The rock-strewn and shallow waterways of the Adriatic place considerable disabilities on designers with a result that builders have to secure the necessary carrying capacity by a fuller use of top hamper, the stability of the vessels while not actually endangered being often pushed to extreme limits. This accounts for the top-heavy appearance of many of the craft employed in those waters. The Cantiere Navale Triestino, Monfalcone, now under Italian control, have acquired considerable practice in vessels of this type, and in the ss. *Monfalcone*, built shortly before the war, many of the features peculiar to Adriatic vessels have been embodied.

SS. "Monfalcone."

The *Monfalcone* was constructed for the passenger and cargo trade between Trieste and Monfalcone, run by the Società di Navigazione Monfalconese, and has the following dimensions :—

Length, b.p....	134 ft.
Breadth	21 ft.
Depth moulded	10 ft. 3 in.
Gross tonnage	197·36 tons.
Net tonnage	86·96 tons.

The vessel was built to take Lloyd's highest class for service in the Adriatic, and although primarily designed for the carrying of cargo, accommodation has been provided for a large number of first-class and second-class passengers. The vessel has a long promenade deck amidships solely for the use of first-class passengers, and so arranged that in working the cargo the passengers are not interfered with. The first-class saloon is placed under the main deck forward and is entered from under the promenade deck by a handsome and spacious companion. The saloon is tastefully panelled in lincrusta and mahogany and is comfortably upholstered.

The second-class passengers are placed aft on the poop, with a light and airy saloon neatly finished in polished pitch pine.

The total number of passengers certified to be carried is close on 400, and for which deck space is available. The officers and crew are berthed forward under the forecastle.

In order to facilitate the discharging of cargo there are two steam winches, and the necessary derricks for working the hatches through the gangway doors fitted in the bulwarks. A windlass of ample power has been supplied, and there is steam steering gear amidships with control gear on bridge.

A complete installation of electric light was fitted throughout the ship by the builders, with clusters for working the cargo, and special deck lights for use on evening cruises.

The main machinery was constructed by Messrs. MacKie & Baxter, Glasgow, and consists of triple expansion engines having cylinders 12 in., 20 in., 32 in. with a stroke of 22 in., with one horizontal return tube boiler 13 ft. diam. by 10 ft. 6 in. long, constructed to Lloyd's requirements for a working pressure of 160 lb.

At the trial trips a speed of 12 knots was attained.

GERMAN FISHING COMPANIES.

Though their career has been chequered since the war, German fishing companies appear to have attained results which are not on the whole unfavourable. It is, of course, impossible to judge with accuracy to what extent accounts and balance sheets have been "manipulated" and from the reports of numerous German companies it is impossible to avoid the impression that a continuance of the "prosperity" shown on paper must spell bankruptcy if long continued. It is interesting to note that quite a number of those companies which are compelled to admit serious injury by the war, count on ultimate indemnification by the German Government.

The Hansa Hochseefischerei A.G. (Hamburg) claims to have kept its fleet profitably engaged in various directions since the outbreak of war. Including £1,095 (£805) brought forward, there was obtained £15,600 (£11,400) gross revenue during the past financial year and from a net balance of £5,750 (£3,770), 10 per cent. (8 per cent.) dividend was paid, £595 transferred to reserve and £1,410 carried forward. In order to add three more vessels to the company's fleet, the share capital has been raised from £36,800 to £49,000 by fresh issues at 106 per cent.

The 14 luggers of the Leerer Heringsfischerei A.G. (Leer) completed one round trip in the financial year 1914-15 but had to interrupt their second trip owing to the outbreak of war. Ten vessels reached home, two are interned at Stavanger and two were sunk by us. The year's working showed a loss of £13,500. The company hopes to receive a State indemnity after the conclusion of peace; for the present the luggers remain idle. Depreciation has been reckoned as in normal year and, including the total loss of the *Möve* and *Albertine*, amounts to £12,100. The Deutsche Seefischhandels A.G. (Hamburg) declares 12½ per cent. dividend for the past financial year; last year no dividend was paid.

For its first year of working, the Hamburg-Cuxhavener Fischdampfer, A.G. "Alte Liebe" declared 5 per cent. dividend. Work was commenced at the beginning of the financial year with four purchased steamers. Of eight new steamers which it was thought would be available by this time, the *Volksdorf*, *Bergedorf*, *Farmsen* and *Wohldorf* are completed. The gross profit amounts to £8,500 and the net profit to £3,990, from which £510 is carried to current account. The balance sheet shows steamers, £54,500; new constructions, £21,500; bank balance, debtors and shares, £1,730. The share capital is £61,000; mortgages are set down at £9,300 and creditors at £1,760.

It will be noted, however, that the later reports which we publish this week in the news section, show distinctly unfavourable results.

STEAMSHIP APPLIANCES.

CENTRE-SLINGING OF LIFE-BOATS FROM A SINGLE DAVIT.

Most lifeboats are housed and handled on the ordinary two-davit system, and without mechanical aid. The application of mechanical in addition to, or in place of, manual power has of late years received somewhat extensive adoption, in large passenger-carrying ocean liners especially, and although it must be said that a number of the power systems proposed and to some extent adopted, have serious drawbacks as to complicated working, &c., the advantage which approved mechanical aid represents on crude and primitive manual methods is unquestionable, where large numbers of boats have to be dealt with especially. Apart from the question of adopting power systems, however, or even of enlisting mechanical aid to any extent (although this is now imperative by Board of Trade requirements as regards swinging boats outboard against a list) one outstanding and broadly marked departure from conventional lines consists in the use of a single davit, by which boats are slung from the centre, instead of the ordinary two davits suspending boats from each end. Although a departure from conventional lines the single davit is not an innovation. The general principle of centre suspension from a single derrick davit is in use in many of our warships, and is still more extensively employed in vessels of the American and French navies.

In the present article attention is specially directed to a type of single davit and central suspension arrangement, which for the past two years has been in use on board several steamers of Ellermann's City Line and giving every satisfaction. This is Graham's patent single davit and central suspension gear by which full-sized lifeboats are swung out, and safely lowered with passengers, by two men in less than one minute; the lowering being entirely under the control of one man. It is the invention of Captain John Graham who has had long and intimate experience, as an officer and shipmaster, of the many shortcomings of the ordinary two-davit arrangement. Before being installed on the City Line vessels, the davit and gear received the approval of the Board of Trade after exhaustive tests made at various ports throughout the United Kingdom. While conforming to the conventional shape the davit is of the derrick order, lattice built, and has mounted on it simple but powerful mechanical gear which lifts, swings out and lowers the boats with great expedition and safety, as well as rapidly recovering the empty block, under the control of few hands compared with the number of hands required by the ordinary two-davit arrangement. The boats are slung centrally from one point of suspension—spread out however into two where actual attachment to the boat is made—and the suspending medium is a single chain, or wire rope, with patent releasing hook, as against the two independent block and fall tackles and hooks.

Lifeboat Swung Outboard by a Graham Davit.

With the case of the *Hesperian* in mind as well as that of the *Falaba*, *Lusitania*, *Volturno*, &c., and the fateful hitches attending the work of boat launching it is scarcely necessary to dwell on the drawbacks of the ordinary two-davit system. In the case of boats of the larger size, 28 or 30 ft. the distance between the davits is 23 ft. or 25 ft., while sometimes it is greater than the boat length, viz., 33 ft. At such a distance apart—and, say, on a dark night in the midst of confusion arising from collision or torpedoing—it is only natural that the men required at each davit should have difficulty in knowing whether they are lowering their end faster or slower than the men at the other davit. With the ordinary triple blocks and falls, forming a three-fold manilla tackle, lowering a boat a distance of between 60 ft. and 70 ft. involves the letting out of 420 ft. of manilla fall at each davit and, as is obvious, it would take but little variation in the speed at either to let one end down faster

than the other, especially with the possibility in cold and wet weather of the manilla tackle twisting and fouling. The almost certain result is—as happened in the recent case of the *Hesperian*—one end dips and becomes detached, precipitating the occupants into the sea. With the Graham single davit and suspension gear, on the other hand, the lowering and releasing of the boat on an even keel is assured, even when the ship is down by head or stern. Whenever the boat is waterborne automatic release of the boat is effected through the action of a single releasing hook afterwards described.

The mechanical gear forming an integral part of the Graham davit is mounted upon it at a convenient working height enclosed in a sheet metal casing. It consists briefly of a hand winch having fitted to it a self-sustaining screw brake, which—should the men at winch handles for any reason cease heaving—automatically and securely holds the load. There is also a mechanical slewing or turning gear which controls the davit at all points. It is connected to the hoisting shaft, thus enabling the one handle to hoist the boat and turn the davit. The chain—or wire rope—which forms the medium of suspension is double from the pulley in head of

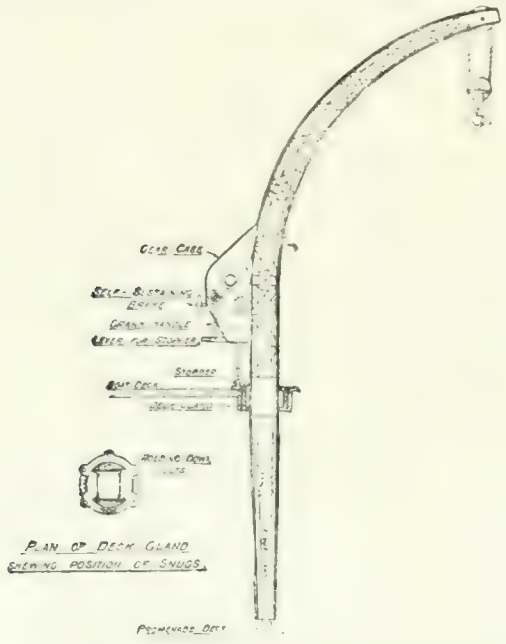


Diagram showing Mechanical Gear of Graham Davit.

davit and is led through a single sheave block which carries the disengaging hook, but is single from the head of davit and led down through roller-guides in the interior of davit, stowing itself in the hollow bottom end of davit, and in this way securing freedom from hamper and confusion around the boat station, not infrequently the cause of mishap. By means of the winch two men can lift a 30-ft. boat off the chocks, swing her outboard, and lower her to the water in from 45 to 50 seconds for the whole operation. The lowering is under the control of *one* man, as compared with the two men necessary with the ordinary davits. The time taken to lift, swing outboard, and lower a 30-ft. boat with the ordinary davits is about 4 minutes, while 12 men are necessary to accomplish the swinging out, and 4 men the lowering. By means of the mechanical slewing gear the Graham davit is capable, in the event of the ship taking a list, of turning out the davit with its load against an inclination of 15 deg., thus meeting the new Board of Trade stipulation. Through one turn of the winch handle, also, the boat can be bound in hard to the ship's side so as to render it easier and safer to take off women and children. For steadiness and fairness in lowering the boat painter is passed down to the promenade deck at a suitable angle and there handled as a guy to keep the boat in the fore-and-aft direction, thus dispensing with the need for guys on davit heads as in the ordinary two-davit system.

The disengaging hook and the sling arrangement call for brief notice. The sling consists of two rods spread diagonally out, taking a third of the boat's length forward and aft and securely through-bolted to keel of boat. The rods are held in position by means of eye-plates, bolted underneath the thwarts, to prevent athwartship rolling. Each rod has, at its upper end, a short length of flexible wire rope, meeting in a strong ring which engages with hook. The latter is so shaped and weighted at its point that whenever the boat becomes waterborne, and the strain of load is withdrawn, the point of the hook falls automatically and instantly unships the ring and the flexible ends of the sling, which remain hanging from the rods. The latter are afterwards folded flat in the boat out of the way of occupants by a suitable collapsible arrangement.

For recovering the block and hook to deal with succeeding boats at the same station one man at the winch handle can accomplish this at the rate of 60 ft. per minute, and without any fear of twisting or fouling, the block being unable to capsize. With the best double davit manilla gear now in use and managed by the best trained seamen, the time required for recovery is much longer.

Disengaging Hook and Sling Arrangement.

The Graham single davit has this feature in common with the ordinary form of davit; its housed under portion passes through one deck and is stepped on the deck underneath, having in this way the support of two decks against the load strain. In this essential respect it is considered preferable to some arrangements of power davits which have all the weight of structure, and the strain of full load, concentrated on the one deck, making it necessary to strengthen the deck and take other precautions against dislocation of the gear parts which distinguish such systems. In its design and construction the davit lends itself to the full character of a power davit. It can be fitted with an electric motor, enclosed in the present winch case. Fitted thus the davits would mean a very considerable saving on the first cost entailed by the provision of boat-hoist winches as in many large ocean liners, besides a saving in weight and deck obstruction.

The fact of being able to launch a lifeboat, with two men within one minute would enable all the boats to be handled by trained deck hands alone, without having to depend on untrained stewards, cooks, firemen, &c., and so expeditiously as to render it possible to have all the outside tier of boats afloat before a vessel had time to list to such an angle as would make it difficult, or impossible, to swing the remainder of boats outboard.

GENERAL NEWS SECTION.

PERSONAL.

Capt. P. Weir, master of the ss. *Governor Musgrave*, has been appointed Harbourmaster at Port Adelaide, to succeed Capt. A. Inglis.

Vice-Admiral Camillo Corsi has been appointed Minister of Marine in Italy in place of Admiral Viale who resigned on the grounds of ill-health.

At the meeting of the Mitre Shipping Company on Tuesday Mr. Howard Houlder referred to the absence of Lieut.-Colonel Middleton who was now engaged in serving his country "in another place."

Lieut.-Commander H. T. Gartside-Tipping, R.N., whose death in action is reported, commenced his naval career over 50 years ago, and for some time was inspector of lifeboats on the West of England and the Irish coasts.

Second-Lieut. Meredyth Owen, 9th Welsh Regiment, who was killed in action on September 25 in France, was the younger son of Commander W. H. Owen, R.N.R., Superintendent, Royal Mail Company, Trinidad. He was in his 25th year.

Lieut.-Commander Henry Philip Basden Smith, R.D., R.N.R., who has been granted the Distinguished Service Order, and Lieut. Bomnard Herbert Symns, R.N.R., who has been awarded the Distinguished Service Cross, were both trained on the *Conway*.

Second-Lieut. Neville Japp, who was killed in action in Flanders last week, was the only son of Mr. Frank Japp, of Japp, Hatch & Co., shipowners, Liverpool, and grandson of Mr. John Japp, shipowner and a former Lord Mayor of Liverpool. Lieut. Japp was 24 years of age, and was before the war in the London office of Japp, Hatch & Co.

Second-Lieut. George Short Sharer, of the 7th Royal Scots Fusiliers, who was killed on September 27 in France, was the eldest son of Mr. Edmund Sharer, J.P., Thirlmere Lodge, Gosforth, Newcastle-on-Tyne. He served his apprenticeship as a shipbuilder at the Naval Construction Works, Dalmuir.

Mr. T. H. Phipps, who has retired from the position of Claims Adjuster of the London Assurance Corporation, was appointed to the company 31 years ago, and has held a foremost position among the claims adjusters of London. He was a member of the committee of the Salvage Association; he will be succeeded by Mr. F. H. Carey, the present deputy.

The death is announced of Mr. William Arthur Bradford, who became an Underwriting member of Lloyd's in 1868 and was a partner in the Brokerage firm of Robert Bradford & Co. Although for some time he had taken but little active part in the business, his genial personality had endeared him to many of the older members of the "Room."

The Archbishop of York, at Hull, has consecrated the King Edward the Seventh Memorial Church, and dedicated the new Church of England Home for Waifs and Strays. Both buildings have been erected by Mr. Christopher Pickering, who started life as a cabin boy in a fishing smack, and is now one of the leading trawler-owners in the country.

The President of the Board of Trade has undertaken to present the awards of the Liverpool and London War Risks Association to Captain Main and the officers and crew of the Allan liner *Hesperian*, in recognition of their services on the occasion of that vessel being torpedoed off the South coast of Ireland on September 4 last. The ceremony will take place at the Liverpool Town Hall on Friday this week.

Mr. Henry Radcliffe, shipowner, of Cardiff, has presented an up-to-date motor ambulance for the use of units of the Welsh Army Corps when they take the field.

Lieut. William Gray, only son of Mr. W. C. Gray, D.L., of Thorpe Perrow, chairman of Wm. Gray & Co., shipbuilders, West Hartlepool, was wounded in the fighting in France recently, and is reported as missing. Lieut. Gray joined the 2nd Yorkshire Regiment at the beginning of the war, and had been in France since March. He is 20 years, of age and, having left Loretto School, was to have gone to Cambridge University in October last.

Captain Robert M'Fie, of Glasgow, who was master of the Clyde Shipping Company's steamer tender *Ireland* at Queenstown for the past 20 years, has died in the Dardanelles of dysentery. During his long period at Queenstown he intercepted the homeward and outward bound transatlantic liners and conveyed hundreds of thousands of sacks of mails to and from the steamships. Three months ago Captain M'Fie was transferred to another of the company's steamers, as master-in-charge, and was despatched to the Dardanelles on Government duty.

Mr. Thomas Joseph Callaghan has been elected a Director of the Barry Railway Company in succession to Mr. John Howard Thomas who has resigned. Mr. Callaghan is a well-known and popular Cardiff docksman, having been connected with the coal-exporting firm of L. Gueret, Ltd., of which he is chairman, for over 40 years. He is also chairman of Amaral, Sutherland & Co.; the Anglo-Argentine Coal Company; La Società Britannico-Italiana Gueret (Genoa); and Gueret, Gait & Co., Ltd.; and deputy-chairman of the Naval Colliery Company and director of La Société Générale de Houilles et Agglomeres (Paris). He is also closely associated with the Cambrian Combine of which Mr. D. A. Thomas is the head.

U.S. SHIPBUILDING.

The Bureau of Navigation, Department of Commerce, reports 94 sailing, steam and unrigged vessels of 15,410 gross tons built in the United States and officially numbered during the month of August as follows:—

	Atlantic and Gulf.		Pacific.		Porto Rico.		Great Lakes.		Western Rivers.		Total.	
	No.	Gross.	No.	Gross.	No.	Gross.	No.	Gross.	No.	Gross.	No.	Gross.
WOOD.												
Sailing ...	4	1,982	—	—	1	7	—	—	—	—	5	1,989
Steam ...	31	751	15	1,467	-	—	3	32	12	190	61	2,440
Unrigged ...	8	2,118	3	62	—	—	1	113	2	12	14	2,305
Total ...	43	4,851	18	1,529	1	7	4	145	14	202	80	6,734
METAL.												
Sailing ...	—	-	—	—	-	—	—			-	—	—
Steam ...	4	844	1	222	-	—	4	7,471	4	132	13	8,669
Unrigged ...	—	—	—	—		—	—		1	7	1	7
Total ...	4	844	1	222	—	—	4	7,471	5	139	14	8,676
TOTALS.												
Sailing ...	4	1,982	—		1	7	—	—	-		5	1,989
Steam ...	35	1,595	16	1,689			7	7,503	16	322	74	11,109
Unrigged ...	8	2,118	3	62	—	—	1	113	3	19	15	2,312
Grand total...	47	5,695	19	1,751	1	7	8	7,616	19	341	94	15,410

The largest steamer included in these figures is the *W. F. White* (7,180 tons gross) for the American Shipbuilding Company.

From other sources than construction four vessels (officially numbered in accordance with the Act of August 18, 1914) of 12,599 gross tons were added to the merchant fleet. Three were British built and one, the *Communipaw*, was constructed at Stettin.

AN APPEAL FOR SEAFARING PRISONERS.

The Secretary of the Imperial Merchant Service Guild sends us an appeal on behalf of interned British merchant seafarers. From information received by the Guild it appears that those in Turkey are all well in health with the exception of one named Andrew Hutton who is now being well looked after at the Seamen's Hospital, Smyrna. It is stated that those interned are becoming very weary of their confinement, especially as, being troubled very much with vermin, they can get no proper rest night or day, and the heat, of course, makes matters worse. They are very short of pipes and smoking materials but as regards tobacco it is stated that they manage fairly well as they buy the leaves and roll them similarly to what is done in the navy. They dread to think of another winter in Turkey as they are all more or less short of clothes and will, in consequence, feel the cold weather very much. With the kindly assistance of the United States Ambassadors the Guild have been able to send out to these prisoners substanital sums of money on two occasions and they are doing everything they possibly can in ameliorating the sad position of these prisoners.

The Guild has received information as regards those in the internment camps at Ruhleben, Germany. It seems that they continue to be badly in need of proper and adequate food. They also dread the coming winter and are in need of blankets, woollen mufflers, socks and the like. The Guild War Fund Committee would be grateful for articles such as these which they would see were forwarded to the proper quarter. They should be addressed to "Lieut. T. W. Moore, R.N.R., Guild Offices, The Arcade, Liverpool," when they will be acknowledged in due course. It may be added that practically ever since the outbreak of war the Guild has been regularly sending substantial parcels of tobacco, cigarettes, provisions, &c., to each interned merchant captain and officer in Germany and they are now sending a pair of blankets to each.

The following list of vessels from which seamen and fishermen have been detained as prisoners by the Central Powers and Turkey has just been issued by the Board of Trade:—

Name of ship.	Owners.
[illegible]	Ellerman Lines.
[illegible]	General Steam Navigation Company.
[illegible]	Elder Dempster & Co.
[illegible]	Bell Bros. & Co., Glasgow.
[illegible]	Liverpool & Hamburg SS. Company.
Brandenburg	Leith, Hull & Hamburg Steam Packet Co.
[illegible]	Great Central Railway Company.
Campeador	McAndrew & Co., Lawrence Pountney Hill, E.C.
Capricornus	Grimsby & North Sea Trawling Company.
Carisbrooke Castle	T. Scholey & Co., East Greenwich.
[illegible]	T. Wilson, Sons & Co.
[illegible] (F)	Grimsby & North Sea Trawling Company.
[illegible]	Palgrave Murphy & Co., Dublin.
,, *Berlin*	,, ,, ,,
,, [illegible]	Great Central Railway Company.
,, [illegible]	Palgrave Murphy & Co., Dublin.
,, *Hamburg*	,, ,, ,,
,, *Khios*	Ellerman Lines.
,, [illegible]	Great Central Railway Company.
,, *Munich*	Palgrave Murphy Co., Dublin.
Clyde Valley	H. Crawford, 2, Copthall Buildings, E.C.
[illegible]	Leith, Hull & Hamburg Steam Packet Co.
[illegible]	J. Westoll, Sunderland.
Coralie Horlock	L. W. Horlock, Mistley, Essex.
[illegible]	Leith, Hull & Hamburg Steam Packet Company.
Dacre Hill	Chart Shipping Company, Liverpool.
[illegible]	W. & C. T. Jones SS. Co., Cardiff.
[illegible]	Lancashire & Yorkshire Railway Company.
[illegible] (F)	National Steam Trawling Company, Hull.
Dunkergue (X)	J. O. W. Whitmore, Ipswich.
Duns Law	T. Law & Co., Glasgow.
Edwin Hunter	Goole & West Riding SS. Company.
Elba	Leith, Hull & Hamburg Steam Packet Company.
Equity	Lancashire & Yorkshire Railway Company.
[illegible] (F)	Great Northern Steamship Fishing Company.
[illegible] (F)	Boston Deep Sea Fishing & Ice Company.
Fleetwing	John George Hill SS. Company, Newcastle.
Frankdale	Palace Shipping Company, Liverpool.
Garesfield	Gordon SS. Company, London.
[illegible]	Denholm Line Steamers, Greenock.
George Casson (X)	Prichard Bros. & Co., Port Madoc.
[illegible]	A. Weir & Co., London.
[illegible] (F)	Wm. Hutchison, Aberdeen.
Glenearn	McGregor, Gow & Co., London.
Glyndwr	Scarisbrick SS. Company, Cardiff.
[illegible]	T. Baskcomb, Grimsby.
Heworth	Newbigin SS. Company, Newcastle.
[illegible]	Wilsons & North Eastern Railway Shipping Company.
[illegible]	Boston Deep Sea Fishing & Ice Company.
[illegible]	Gulf Transport Company, Liverpool.
[illegible]	,, ,, ,, ,,
[illegible]	Leith, Hull & Hamburg Steam Packet Company.
[illegible] (X)	Galgate Company, Liverpool.
[illegible]	General Steam Navigation Company.
[illegible] (X)	T. Ashburner, Barrow.
[illegible]	Boston Deep Sea Fishing & Ice Company.
[illegible]	Tyne Tees SS. Company, Newcastle.
[illegible] (F)	Boston Deep Sea Fishing & Ice Company.
[illegible] (F)	Consolidated Steam Fishing & Ice Company, Grimsby.
[illegible]	Gordon SS. Company, London.
[illegible] (F)	Boston Deep Sea Fishing & Ice Company.
[illegible] (F)	North-Eastern Steam Fishing Company, Grimsby.
[illegible]	J. Fenwick & Son, London.
[illegible]	J. Warnack & Co., Leith.
[illegible]	W. H. Beeley, Grimsby.
[illegible] (F)	F. Parkes, Boston.
[illegible]	J. Westoll, Sunderland.
[illegible] (F)	W. Cramlin & Others, Grimsby.
[illegible]	Scotia SS. Company, Glasgow.
[illegible]	Elder & Fyffes.
[illegible]	Leith, Hull & Hamburg Steam Packet Company.
[illegible]	Elder, Dempster & Co.
[illegible]	Imperial SS. Company, Manchester.
[illegible]	Thomson & Co., St. John, N.B.
[illegible] (F)	Grimsby & North Sea Trawling Company.
[illegible] (F)	,, ,, ,, ,,
[illegible] (F)	Boston Deep Sea Fishing & Ice Company.
[illegible]	Furness, Withy & Co.
[illegible]	J. Westoll, Sunderland.
Queen Mary (X)	J. Harvey, Littlehampton.
[illegible] (F)	G. F. Sleight, Grimsby.
[illegible]	J. Ridley, Son & Tully, Newcastle.
[illegible] (F)	G. F. Sleight, Grimsby.
[illegible]	Austen Friars SS. Company, London.
[illegible]	W. Thomas, Sons & Co., London.
[illegible]	Bolton SS. Company.
[illegible]	R. Connan Reid & Co., Aberdeen.
[illegible]	Liverpool & Hamburg SS. Company.
St. Cuthbert	Grimsby Victor Steam Fishing Company.
St. George (F)	R. Hastie, North Shields.
Stagaro	Elder, Dempster & Co.
[illegible]	Eagle Oil Transport Company.
[illegible]	Bristol Steam Navigation Company.
[illegible]	T. W. Smyth, London.
[illegible]	Dale SS. Company, Bristol.
Seaham Harbour	Marquess of Londonderry, Seaham Harbour.
[illegible] (F)	Roberts & Ruthven, Grimsby.
[illegible]	Limerick SS. Company.
[illegible] (F)	Boston Deep Sea Fishing & Ice Company.
[illegible]	Walter Runciman & Co., Newcastle.
[illegible]	John George Hill SS. Company, Newcastle.
[illegible]	Burrell & Son, Glasgow.
[illegible] (X)	E. Whitmore, Brightlingsea.
[illegible]	Toyne, Carter & Co., Fowey.
[illegible]	W. Thomson & Co., St. John, N.B.
[illegible]	Hain SS. Company, St. Ives.
[illegible]	,, ,, ,,
[illegible] (F)	Atlas Steam Fishing Company, Grimsby.
Tregarian Transport	Empire Transport Company, London.
[illegible]	Leith, Hull & Hamburg Steam Packet Company.
[illegible]	General Steam Navigation Company.
[illegible] (F)	Boston Deep Sea Fishing & Ice Company.
Wild Queen	J. Ridley, Son & Tully, Newcastle.
[illegible] (F)	Boston Deep Sea Fishing & Ice Company.
[illegible]	Denaby & Cadeby Main Collieries.
[illegible]	Liverpool & Hamburg SS. Company.
[illegible] (F)	A. E. & W. Lambert, Grimsby.

(F) Fishing vessel. (X) Sailing vessel.

Docker's Wages at Scottish Ports.—There is at present a movement on foot among dock labourers at various Scottish ports for an increase in their rates of pay, and efforts are being made to settle matters so as to avoid any stoppage of work. At Leith, a settlement has been reached by a slight concession being made to the workmen by the shipowners and stevedores. The men asked for an increase of 1d. per hour in the day rate and 2d. per hour in the overtime rate, bringing these rates up to 9d. and 1s. per hour respectively. By the terms of settlement accepted by the workers the rates will in future be 9d. per hour for day work and 11½d. for overtime. These rates came into force towards the end of last week. At Greenock the agitation for an increase of wages still continues among the dockers, who demand a rise of 1d. per hour on the existing rate of 9d. The employers decline to grant this request on the ground that they conceded an advance of 1d. per hour only a month ago. As sugar is the principal commodity dealt with at Greenock it is probable that the Sugar Commission, who are acting for the Government, will take action in the event of a strike being declared.

FROM OUR CORRESPONDENTS.

CLYDE AND DISTRICT.

(From Our Own Correspondent.)

Glasgow.

The building of new vessels on the Clyde for the mercantile service appears to be confined now to a comparatively small number of firms, and of these the majority are located on the lower reaches of the river. The amount of new tonnage launched on the upper part of the river during September is perhaps the smallest on record, and consisted of a dredger at Renfrew and a tug at Kirkintilloch. At Port Glasgow, however, there were launched three high-class cargo steamers, of a total tonnage of 14,000 tons. The output from Clyde yards for the month consisted of 5 vessels of about 15,620 tons, compared with 6 vessels of 15,660 tons for the previous month. The new tonnage launched during the past nine months of the present year amounts to 185,890 tons, which is only about half of the amount launched during the corresponding period of 1914. There were no launches from Forth yards during September, and no new contracts were reported to have been placed with Scottish shipbuilders during the month.

Activity in the Steel Trade.

The Scottish steel works continue exceptionally busy and the demand for ship and boiler plates is very good. Prices have hardened slightly following on the recent rise in raw material. Ship plates are now quoted at from £10 5s. to £10 10s. and upwards, for home and export delivery, and angles from £10 10s. to £11, less 2½ per cent. A good deal of the output of the steel works is for Government account, new business in other directions being rather scarce. Fairly large quantities of American steel are being landed at Glasgow and Greenock from month to month. During August there were landed at Scottish ports 8,184 tons of steel from the United States and Canada, the total value of which was £67,315. From the Continent and Sweden there came only 77 tons valued at £1,175 during the same period.

Ship Repairing.

The amount of ship repairing work in the hands of Clyde firms is at present fairly large. The Clyde Shipbuilding Company have commenced work on the cross-Channel steamer *Wicklow*, belonging to Dublin owners. The internal repairs were carried out while the vessel was berthed in James Watt dock, and last week she was placed in the Garvel dry dock. After being in dry dock for about three weeks, the coasting steamer *Deloraine* has now resumed her service. She was overhauled by James Lamont & Co. Caird & Co., Greenock, are engaged in overhauling the large steam yacht *Nahama*, which has been lying in the Gareloch for some time. Another vessel which was recently overhauled at Greenock was the *Elswick Grange*, which left the Clyde in ballast last week for Barry. At Glasgow repairers have in hand the large auxiliary sailing vessel *France*, and the Khedivial Mail Steamship Company's steamer *Tewfikieh*.

THE NORTH-EAST COAST.

(From Our Own Correspondent.)

Newcastle-on-Tyne.

Some indication of the effects of the war upon the output of commercial tonnage is shown in the returns, now available, of the volume of work launched on the Tyne and Wear during the present year. The figures for the Hartlepools and the Tees yards are not given out for publication until the end of the year, so that a comparison for the whole of the North-East Coast district is not possible. During September, 6 vessels were launched from Tyne shipyards, as compared with 9 vessels launched during September, 1914, and making this year's total tonnage 70 vessels, as compared with 68 vessels launched during the past nine months of last year. On the Wear, only 2 vessels—the ss. *Sneaton*, 3,450 tons, building by Wm. Pickersgill & Sons, Ltd., of Southwick, and the ss. *Pruth*, 4,703 tons, building by Jos. L. Thompson & Sons, Ltd., of Sunderland—were launched, as compared with 3 vessels of 15,450 tons launched in September, 1914. For the first nine months of the current year the total output on the Wear has been 27 vessels of 93,448 tons, as compared with 51 vessels of 205,735 tons for the same period of last year, and 59 vessels of 204,476 tons for the first nine months of 1913. Very few inquiries are in circulation for vessels not directly or indirectly required in connection with the national services, and ordinary merchandise work is being increasingly held up. Not only are there the old difficulties as to the increasing price of, and delays in obtaining, material, and the shortage in all classes of shipyard labour, but there is also difficulty in securing machinery from the engine builders who are becoming increasingly occupied on munition work.

Ship Repairing.

Ship repairing continues to be of only moderate proportions, and few new contracts of first importance are to be reported. At South Shields, Brigham & Cowan, Ltd., have in dock the ss. *Standish Hall*, 7,150 tons d.w., one of the fleet of E. Nicholl & Co., of Cardiff, and also, alongside their quay for heavy repairs, the Royal Mail steamer *Monmouthshire*. The Middle Docks & Engineering Company, Ltd., have in hand the ss. *Magnus Mail*, 3,240 tons d.w., belonging to James Westoll, of Sunderland, and the ss. *Sola*. The graving docks at West Holborn of Jas. Readhead & Sons are occupied by the Newcastle steamers *Wm. Balls* and *Lotusmere*, both for heavy bottom repairs. Smith's Dock Company, Ltd., are dealing with the ss. *Auricula*, of London, the ss. *Joachim Brinch Lund*, of Bergen, the Danish steamer *Sanui*, and the Runciman liner *Fernmoor*. At Jarrow, the Mercantile Dry Dock Company, Ltd., are well employed, having in their docks the ss. *Venetia*, belonging to Gow, Harrison & Co., of Glasgow, the London oil steamer *Weehawken*, and the locally owned steamer *Kenilworth*. At Blyth, Sunderland and the Hartlepools the graving docks continue to be fairly regularly occupied. At Sunderland, the ss. *Queensland* is in the Wear Commissioners' dock, S. P. Austin & Son's pontoon is occupied with the ss. *Daghestan*, and their dry dock with the ss. *Staffa*, belonging to Jas. Currie & Co., the managers of the Leith, Hull & Hamburg Steam Packet Company, Ltd.

MERSEY SHIPPING AND SHIPBUILDING.

(From Our Own Correspondent.)

Liverpool.

The Mersey shipyards are not only troubled with a good deal of time being lost by workers, but many of their employees are apparently addicted to gambling, and this in working hours. Four men charged with this latter offence were before the Liverpool Munitions Court on Friday, but as the cases were the first under the Munitions Act, they were let off lightly. The grievous part of their wrong doing is that they continued their game long after the whistle had summoned them to resume work. Mr. J. W. P. Laird informed the court that gambling was a growing evil among the men who were earning good money at Birkenhead, and the firm strongly objected to their premises being used for the purpose. If the men went into the street and gambled they would be taken up by the police.

There were also four summonses against employers for unreasonably withholding permission to leave. Only in one case out of the four was the worker successful, the firm in question not being directly engaged on Government work.

Whether it be owing to the withdrawal of Greek merchant steamers for war transport purpose or not, it is a fact that within the last few days outward freights have been booming and a scarcity of tonnage is becoming noticeable particularly for immediate engagement to and from the Mediterranean. Rates have also advanced in this trade, and coal tonnage values are up to 45s. to Port Said. With some seasonal trades now coming on the market for tonnage together with other trades being made more buoyant under the influence of higher freights, it is likely that shipowners will reap another good harvest throughout the winter months and well into next year.

SOUTH WALES NOTES.

(From Our Own Correspondent.)

Cardiff.

Colonel C. S. Denniss's scheme for increasing the shipping facilities of the Bute (Cardiff) Docks was the subject of adverse criticism at the monthly meeting of the Cardiff Chamber of Commerce held last week. The scheme of the general manager of the Cardiff Railway Company briefly is that two nests of railway sidings shall be constructed at the docks, capable of standing about 90,000 tons of coal, and that the traffic of the docks should be in the hands of the Cardiff Railway Company, who would transfer the coal from

the sidings to the tips and return the empties to the sidings. At present four railways, the Cardiff Railway Company, Great Western Railway Company, Taff Vale and Rhymney Railway, serve the docks, and by relieving them of this work the former company ask for a tonnage rate. Mr. E. Ford, representing the Great Western Railway Company, stated that the railway companies did not agree in principle to Colonel Denniss's proposals, though they did agree to the principle of single control of the dock lines. They also agreed that any scheme to increase the capacity of the tips should receive careful consideration. Colonel Denniss's scheme, contended Mr. Ford, was a very crude one and was not workable, and the railway companies, who were expected to pay for it, should have been consulted before the scheme was developed. The proposed scheme would not bring about single control. Colonel Denniss had said that the scheme would increase the capacity of the tips by 50 per cent. If that were so, that in itself ought to bring in the remuneration for the Cardiff Railway Company, and they should not expect 3d. per ton from the railway companies, as suggested, for carrying the coal to the tips from the sidings and returning the empties. Colonel Denniss, replying to Mr. Ford's criticism of the scheme, contended that in his interviews with the general managers of the Great Western, Taff and Rhymney Railway Companies the principle that the work of the docks should be done by one company, instead of four as at present, was agreed to. The railway companies assumed a 3d. per ton payment, which was also inaccurate as the matter was not included in formal communications, though it was mentioned at first. But he had also said that the Cardiff Railway Company would be willing to leave this matter to arbitration. He suggested that the representatives of the Great Western, Rhymney, Taff and Cardiff railways should meet representatives of the Chamber in a round-table conference.

Payment for Coal.

The Chamber also decided to have a special private meeting to discuss the resolve of the colliery owners that in regard to sales of coal payment from January 1 next shall be net cash at 14 days, or cash against invoice less ¼ per cent., at the seller's option, instead of cash in 30 days as at present.

It was also announced that in future boats would be allowed to load, at Cardiff, at their own risk, on receipt of a telegram from the Coal Exports Committee that a licence had been granted.

Ship Repairing.

Little change of importance has taken place in the ship-repairing trade. The requisitioning of Greek vessels by the Greek Government is certain to adversely affect the industry as a large number of these steamers trade to this district and receive their repairs. The Cardiff Channel Dry Docks & Pontoon Company have a good stem job on the steamer *Minnesota*, and also a big bottom job on the steamer *Neebing*, which requires extensive repairs. T. Diamond & Co. are carrying out very heavy bow damage repairs to the steamer *Cardiff Hall*, which was in collision. Elliot & Jeffery are putting the steamers *Castro* and *Grigorios Anghelatos* through survey, and are finding that there is a large amount of general and internal work to be done. The Cardiff Junction Dry Dock & Engineering Company are repairing extensive fire damage in the forehold of the steamer *Horngarth*. John Shearman & Co., Ltd., are working on 25 steamers at Cardiff, Barry and Newport, including a heavy overhaul to the steamers *Helgoland*, *Lake Michigan*, *Elstree Grange* and *Bollington Grange*, and general repairs to the steamers *Gelda*, *St. Marc*, *Madeleine*, *Gledhow*, *Netherby Hall*, *Durango*, *Flandres* and *Adolf Deppe*. The Mountstuart Dry Docks, Ltd., are busy with damage repairs to the steamers *Roma*, *Ascot* and *Bessarabia*, general work on the steamers *Antinous*, *Acme* and *Highland Monarch*, and a overhaul of the steamer *A. D. Kydoniefs*.

Honolulu.—Honolulu Harbour has been re-dredged to a depth of 35 ft. below mean lower low tide and the navigable area has been increased by about 684.000 sq. ft. It is recognised that the harbour of Honolulu is too small to meet the demands likely to be made on it consequent on the increase of traffic due to the opening of the Panama Canal. The natural course is to make an opening through the low-lying land immediately to the westward into Kalihi Harbour and channel, and thereby add another 6 to 8 acres of water space and a second entrance. For the time being plans have been approved by the Federal Government for the channel connecting Honolulu Harbour with that portion of Kalihi Harbour known as Kapalama Basin and the improvement of this basin.

THE COAL MARKETS.

(From Our Own Correspondent.)

South Wales.

On the whole a considerable volume of business has been passing in the Cardiff coal market, and statistics as to the amount shipped show a remarkable improvement upon the figures for the corresponding period of last year. A large amount has gone to the Mediterranean and French ports, whilst to South America there have not been heavy shipments. During the last day or two there has been an improvement in the supply of tonnage, but not sufficient to prevent stoppages of certain collieries.

Dearth of tonnage is, of course, a condition of affairs that may be expected to prevail during the war. Freight rates, in these circumstances, remain firm. Certainly the withdrawal of Greek ships will continue to be felt in this, as in other markets, for a considerable volume of coal shipments were made in these vessels. Best Admiralty coals are all being taken by the Government, whilst the value for second-class descriptions is round about 20s., possibly just a fraction less, for prompt shipment. Best drys are quoted at 24s. to 24s. 6d., and Black Veins at 20s. to 21s. Eastern Valleys (best) stand at 19s. to 19s. 6d., and No. 3 Rhondda (large) at 21s. to 22s. Pitwood is quoted at 36s. to 37s.

North-East Coast.

In the Newcastle coal market there is evidence of a steady tone, and recent values are maintained. Best steams are procurable at 18s. 3d. to 18s. 6d., whilst Tyne Primes are quoted at 17s. 6d. to 18s. The collieries, generally speaking, are well booked, and over the week-end there was a very satisfactory arrival of tonnage for coal loading. Details as to allotment of the contract for the supply of coal to the Norwegian State Railways is now expected; possibly before these lines appear in print it will be definitely known what allotment has been made. The amount required is 70.000 tons, and the anticipation is that a good proportion of this will go from the Tyne.

Unscreened steams have been sold at 15s., and also at 15s. 3d., whilst Northumberland households stand at 21s. to 22s. There is a little more steadiness in coking coals and business has been done at from 15s. 6d. to 16s. 6d. Durham bunkers likewise show improvement, best sorts being dealt in at 16s. 3d. and ordinary grades at from 15s. to 15s. 3d. There is a marked scarcity of gas coke, a nominal quotation for which at the beginning of the week was 30s.

The Scottish Ports.

As at other shipping centres, the scarcity of tonnage has had a marked influence upon the Scottish coal export trade. The licensing question also continues to operate against exports, and it would appear that it is the intention of the Government to keep shipments down, more particularly from the West Coast. The trade could very well do with more attention in regard to practically all classes of coal. For splints and ells only a fair demand has prevailed, but in regard to washed produce there has been a tendency towards firmer prices.

At the beginning of the week quotations for West of Scotland sorts were as follows:—Ell (best brands), 17s. 3d. to 17s. 6d.; splint (best brands), 21s.; navigation, 21s. to 22s.; and steams, 15s. to 17s. Fifeshire values were:—Screened navigation, 22s. (about); steam (first-class), 17s. 6d. to 18s. 6d.; and third-class steam, 14s. to 15s. In the Lothians' section best steams stood at 15s. to 15s. 6d., and ordinary steams at 14s. to 14s. 6d.

The Thames.

There has been a rather lessened demand for fresh supplies of house coal, due to the touch of milder weather experienced. For rail-borne households the general tone was firm, the collieries offering supplies which were certainly on the short side. Best Derbyshire Brights on Monday were nominal at up to about 17s. 6d. for prompt business. In the seaborne house coal market there has been no new development, but with a fair inquiry for small consignments the general tone has remained good. Steadiness has prevailed in the steams and factory fuels section, and there is a request for small hards.

Position at Genoa.

Genoa coal importers have been not a little perturbed owing to the requisitioning of Greek steamers by the Government of that country. This is not surprising when it is remembered that more

than half the coal which has been discharged at the port of Genoa during the past year has been brought in Greek bottoms. At the close of September there was a good deal of anxiety in respect of the coal cargoes then outward bound to Italian ports in Greek vessels from this country. It is obvious that the requisitioning of these Grecian ships must have a direct effect upon coal freights.

Stocks of coal at Genoa are pretty large at present. This is largely due to the fact that railway tracks are very scarce. Prior to the requisitioning of Greek boats, Cardiff seconds were offered at 56s. 6d., and the usual mixtures at 55s. For Tredegar 55s. 6d. was quoted and for Mynydd 55s. Anthracite coals are practically unobtainable. The cargoes of American anthracite which are booked for Genoa had not, it is stated, been despatched from the States at the close of September.

American Colliers.

It is well known that during recent times certain steel steamers built on the American lakes have found their way to the Atlantic coast, and there have been employed in deep-sea trade. Two vessels thus to leave the Great Lakes for the coast are the *Arlington* and *Brandon*. They were built in 1910, of steel, at Wyandotte (Mich.), and have each a deadweight capacity of 3,250 tons. Having undergone considerable structural alteration they are now running on the coast, being owned by the New England Coal & Coke Company. It is stated that they will in future be engaged in the coal trade between New England and Southern United States ports.

THE FREIGHT MARKETS.

(From Our Own Correspondents.)

London

A firmer tendency generally is in evidence in most of the freight markets. In the Plate section there has been a good advance in rates and on Tuesday business could be done at 65s., as compared with 57s. 6d. in the latter half of last week. The *Valencia*, 5,500 tons, has been conceded 65s. from San Lorenzo range to United Kingdom, not north of Hull, option, London 66s. 3d. She gives October 15 to November 15 loading. An earlier fixture was that of the *Don Arturo* which was taken up last week for Buenos Ayres loading at 58s. 9d. to the United Kingdom, including the East Coast, not north of the Tyne. Grain from the northern United States ports is offering 12s. 3d. to Bristol Channel ports, London being worth an extra 3d., and further north an extra 6d. To Cette or Marseilles heavy grain is firm at 13s., and 15s. is offering to Greece from Northern Range ports. A Grecian steamer, however, the *Ioannis*, 21,000 quarters, 10 per cent. has accepted 14s. October 10 to 31. A firm demand prevails for steamers for time charter business. For United Kingdom-Holland business £1,200 per month has been secured by an 850-ton steamer. The *Lesreaulx* has been closed at 17s. 6d. for general trade for six months, delivery and re-delivery in the United Kingdom. The *Songa*, a 2,150-tonner, has been taken up for nine months' trading at 20s., Dieppe-Gibraltar range. Ore rates are characterised by firmness. From Bilbao the *Jolaseta*, 3,500 tons, gets 15s. 6d. to Middlesbrough, whilst two other vessels were subsequently closed at 16s. It is suggested that yet higher figures may have to be paid for this business. From Tunis to the Tyne a small spot boat has been fixed at 20s. Alexandria would pay 30s. per ton seed to Hull. Still higher freights are ruling in the Tyne for outward coal business. Little free tonnage was offering on the market at the beginning of the week, and there is nothing to suggest any weakening of rates. For St. Nazaire, Bordeaux and La Rochelle, 25s. is offered. For Marseilles 40s. has been paid, and Oran has been done at 35s. In all probability 42s. 6d. will have to be paid for Genoa. Rouen is quoted at 17s. 6d. to 17s. 9d., whilst London is being fixed at 9s. 3d. and 9s. 6d. Cardiff reports its freight market as quietly firm. Representative fixtures are:—Genoa, 37s. 6d.; Port Said, 45s.; Caen, 16s. 6d.; Lisbon, 24s.; Barcelona, 33s., and Cape Verdes, 35s. From Swansea the *Hellik* has been taken up for Tonnay Charente at 28 fr. coal, 29 fr. fuel. Liverpool to Bordeaux has paid 20s. for coal to the *Harelda*. Glasgow to Bilbao has been done at 22s. to the *Kittiwake*.

Glasgow.

Chartering at Glasgow has been rather difficult during the past week owing to the scarcity of tonnage and the upward tendency of rates, and on several days, since our last report appeared, no fixtures were reported in the market. Coal exporters are finding considerable difficulty in obtaining the tonnage necessary for the fulfilment of their contracts, while the congestion which is said to exist at certain Continental ports does not help matters. The outward rates from Wales were strong on the basis of 40s. West Italy, and 45s. Port Said. It is not surprising, therefore, that the number of fixtures reported on the Glasgow market was smaller than usual. Glasgow to Fécamp, 950 tons, 17s. 3d.; Glasgow to Treport, 800 tons, 17s. 3d.; and Cardiff to Port Said, prompt boat, 45s. The demand for tonnage on time charter was also very good, and while some charterers were able to secure boats at 16s. 6d., others had to pay as high as 20s. on deadweight for suitable tonnage. Time charter, transatlantic trade, 30s. one trip, delivery States, re-delivery United Kingdom-Continent, October; time charter, transatlantic trade, 16s. 3d., six months, delivery Mediterranean, re-delivery United Kingdom-Continent or Mediterranean, October. The American market was strong, with a good demand all round for grain and cotton. Among the fixtures reported were the following:—Baltimore, 32,000 quarters, 10 per cent., Avonmouth, 11s. 6d., October 10-30; Northern Range to Sweden, 14,000 quarters, 12s., two ports, October; New York to Scandinavia, 61s., general cargo, October. There was some inquiry for tonnage from the River Plate, and charterers showed more disposition to advance quotations, which ranged from 60s. to 62s. 6d. from San Lorenzo. The demand from the East was of a very limited character, Calcutta securing a boat at 67s. 6d., deadweight.

Newcastle-on-Tyne.

Despite the fact that business has been very much hampered by several Governmental restrictions, the terms of which cannot be stated here, chartering has been fully up to the recent average. Tonnage is in heavy demand, but still scarce. A certain amount of irregularity is noticeable in rates but, generally speaking, prices are well maintained. The withdrawal of Greek tonnage disturbed the market considerably, and steamers for Mediterranean are exceedingly scarce, a circumstance which has led to very great increases in quotations for that destination. Coasting is decidedly weaker on the week's work, and London at 8s. 6d. records a falling-off of 1s. on recent prices. No great change is apparent in the North French market but, if anything, rates are favouring shippers. For the Bay, 25s. has been paid for Bordeaux or Nantes, a figure which shows this market to be fully firm. Advances of several shillings have been paid willingly for Mediterranean ports, and Genoa, with the usual options, now stands firm at 40s., with Torre Annunziata fixed for at 3s. more. There is practically nothing doing in other directions. Fixtures arranged since last report include the following:—Alexandria, 3,600, 35s.; Bordeaux, 1,800, 24s.; 2,100, 25s.; Boulogne, 1,500, 18s. 6d.; Barcelona, 1,600, 40s.; Brest, 1,600, 24s., coke; Calais, 1,500, 19s.; Caen, 1,000, 17s.; Cette, 1,800, 40s.; Cherbourg, 1,000, 17s.; Dunkirk, 1,500, 18s. 6d.; 600, 17s. 9d.; Fécamp, 400, 24s. coke; Genoa, 3,800, 40s.; 1,800, 40s.; Granville, 400, 24s., coke; Havre, 1,500, 17s.; 1,700, 16s. 6d.; London, 1,050, 9s. 6d.; 1,100, 8s. 6d.; La Rochelle, 2,000, 24s.; L'Orient, 2,000, 26s.; Nantes, 1,500, 25s.; Oran, 1,800, 30s.; Palermo, 3,500, 37s. 6d.; Rouen, 2,000, 18s.; 600, 25s., coke; 1,000, 23s., coke; 1,700, 18s. 3d.; Savona, 5,000, 40s.; Sables, 2,000, 26s.; Treport, 600, 17s.; 900, 17s. 6d.; Trouville, 400, 24s., coke; Torre Annunziata, 3,000, 43s.

Liverpool.

With outward freights growing firmer daily, and tonnage not always obtainable, there is only a moderate amount of business being done. Economic conditions are certainly on the side of owners, and those that have tonnage at their command are certainly justified in holding out for higher rates. In sympathy with the better outward position time charter rates are advancing, and at the same time suitable ships are scarce. For six months in the transatlantic trade 20s. has been paid, and a like period in the general trades is now worth 17s. 6d. with, of course, higher rates for shorter engagements or round trips. Outward fixtures on this market show Liverpool to Bordeaux to be worth 20s., Partington (Ship Canal) to Genoa 31s. 6d., and Manchester to Marseilles 35s. North America still continues to be the most active market homewards, and a scarcity of tonnage is being experienced, particularly for grain and coal shipments to West Italy. Northern Range has paid 14s. for heavy grain to West Italy, and 9s. 6d. is indicated for oats to French Atlantic and 10s. 6d. to West Italy. Montreal is also booking grain tonnage, and has paid 12s. 6d. to Avonmouth. Coal, Virginia to West Italy, has gone quiet, with the rate advanced to 50s., but even at this high level there are indications of ships being sought after. There is likewise a sustained demand for

cotton, and a 140 ft. steamer has been fixed Savannah to Liverpool at 100s., October-November. The River Plate, which has monopolised truly been active at 65s., has eased to 60s., and is now firm at this figure from upriver to United Kingdom. The Eastern markets have a tendency to improve, in sympathy with market values elsewhere, while the same effect is noticeable in the Mediterranean homeward trade, ore ports being particularly in need of tonnage. Nitrate ports are steady at 80s. to United Kingdom, and October freights in the North Pacific strong at 95s. to United Kingdom. Sail freights are quiet, but steady, with rates hardening for coals, Australia to West Coast.

Cardiff and Swansea.

The withdrawal of Greek tonnage from the market by requisitioning on the part of the Greek Government has, as was expected, considerably influenced the outward freight market and rates have advanced to levels which create new records for the current year. The extent of the increase can be clearly seen from the following representative table :—

	Highest	Highest	Previous Highest.	Rise.
[illegible]	1/24	19/-	19/5.	
[illegible]	2/7	2/6	3/-	2/-
[illegible]	17/6	3/-	2/6	6
[illegible]	1/-/7	9/-	2/-	1
Cape de Verdes	1/-	1/-	22/6	1/6
[illegible]	1/8	1/-	3/-	-
[illegible]	1/-	24	2/6	2/6
Las Palmas	1/8	3/-	2/-	-
Marseilles (fr.)	23	48	45	3
[illegible]	1/-	2/-	2/7	1/-
Port Said	21/6	45/-	32/6	12/6
[illegible]	14/6	18/-	17/9	3
St. [illegible]	1/4	2/-	2/-	3
Swanses to—				
[illegible]	1/-/6	17	17/6	1/6
Havre	13/6	16/-	15/-	1/-
[illegible]	2/-	1/-	3/-	1/3
St. Malo	11/6	17	11/6	1/6

During the past month vessels to carry 715,340 tons were fixed to load at Cardiff or Newport compared with 1,410,115 tons and 780,950 tons in September of 1913 and 1914. Though the Greek Government allowed fixed vessels already in dock to load, providing they were going to Mediterranean ports, the market maintained a very firm tone despite the fact that orders were circulating only on a moderate scale. Tonnage offers, however, were quite inadequate while owners also adopted a hold-off policy. For the Mediterranean rates advanced materially and in almost every case record figures were conceded, Alexandria fixing at 36s. (500 tons delivery); Barcelona, 33s.; Genoa with options, 40s., 39s. (twice), 38s. 6d. (four), and 37s. 6d (twice); Gibraltar, 27s. (500 tons delivery); Lisbon, 22s. 6d. (500 tons delivery) and 24s. (400 tons delivery); Marseilles, 46 and 48 fr.; Naples or Torre Annunziata, 35s. (1,000 tons delivery); Port Said 45s. (three) and 35s.; the latter figure being for a 7,500 tonner for November loading, and Tunis 48 fr. (350 tons delivery). The Bay and Coasting markets were quiet but very firm at materially advanced rates, Bordeaux paying 30 fr. (four); Bayonne, 28 fr.; Caen, 16s. 6d.; Chantenay, 29 fr.; Havre, 15s.; Nantes, 25 fr. (twice) and 28½ fr.; Rouen, 15s. 9d., 16s. (twice), 15s. and 18s.; Sable d'Olonne, 29 fr. and St. Nazaire, 24, 25, 28½ and 28 fr. Business for South America was almost at a standstill and rates have sympathetically advanced and up to 45s. was reported to have been paid, while Canary Islands chartering was confined to Cape de Verdes at 35s. and Las Palmas or Teneriffe, 30s. Tonnage to carry 118,750 tons was fixed last week or 7,850 tons less than in the previous week. From Swansea and Port Talbot 198,340 tons was fixed last month against 230,040 and 110,720 tons in September, 1913 and 1914. Last week 40,590 tons was fixed or 7,300 tons less than in the preceding week. Inquiries were fairly numerous and with tonnage below requirements rates appreciably advanced reaching record levels. Caen was done at 17s.; Calais, 18s., 17s. and 18s. 6d.; Dieppe, 16s.; Havre, 15s. 6d. and 16s.; Rouen, 15s. 6d and 18s. (three) and St. Malo, 15s. Mediterranean business was represented by Almeria, 32s.; Barcelona, 32s.; Marseilles, 46½ fr.; and Tunis, 48 fr. Port Talbot chartering was fairly active, Bordeaux paying 28 fr.; Calais, 18s. 6d.; Dunkirk, 19s. 6d.; Huelva, 21s. 6d.; Rouen, 17s. and 17s. 6d. (twice) and Tonnay Charente, 27½ fr.

Hull.

The general conditions of business in the Humber freight market are governed by the tonnage supply, which at the moment is on the scarce side owing to the requisitioning of so large a number of Greek steamers which would otherwise be offering in the Mediterranean market. The Mediterranean market, through the taking off the market of Greek boats and also British boats for Admiralty purposes, has become much firmer, and as high as 40s. is ruling now for Genoa, Savona or Leghorn, whilst for Barcelona 40s. is also ruling. For Bordeaux from Hull 23s. and 24s. has been paid. In the short trades tonnage is also not very plentiful and rates are represented by 17s. 6d. to 18s. for Rouen from Hull, 16s. to 16s. 6d. for Honfleur, Dieppe, or Havre from Hull, 17s. for those ports from Goole, 9s. 6d. to 10s. for London from Goole, and 8s. 6d. to 9s., according to size, for London from Hull. The River Plate market fails to provide much activity.

COMPANY MEETINGS.

Mitre Shipping Company, Ltd.—The annual general meeting of the Mitre Shipping Company, Ltd., was held on Tuesday at the offices of the company, 17, St. Helen's Place, London, E.C. Mr. Howard Houlder, J.P. (chairman) presiding.

The Secretary, Mr. G. A. Nightingale, read the notice convening the meeting.

The Chairman, in moving the adoption of the report said he would like, on behalf of the directors, to congratulate the shareholders on the improved position of the company in comparison with previous years. Apart from the regrettable loss of the steamship *Shirley* through fire, mentioned in the previous year's report, the company's steamers had run remarkably free from accident, and the directors and managers expressed their recognition of the good service rendered by the masters, officers and crews. The loyal help given by members of the staff in the office under trying circumstances was also much appreciated.

Reduction in Loans.

An important feature in the balance sheet was the large reduction in loans, which had been still further reduced since the close of the financial year. The sum under the item of "Investments" was represented chiefly by Exchequer bonds, and was being applied to the payment for steamers recently acquired.

The amount of capital increment realised by the sale of vessels had been placed to the credit of the depreciation fund, raising it to nearly £49,000—a by no means large sum in view of the fluctuations in value which experience showed shipping property was liable to. Turning to the profit and loss account, it would be seen that the profit was £22,358, after applying the sum of £25,000 to the general reserve. Adding to the net profit £112 carried forward from last account, there was £22,470 to be dealt with. As stated in the report, interim dividends of 7½ per cent. had been paid, and it was proposed to pay a final dividend of 5 per cent., making 12½ per cent. for the year, which would leave £2,756 to be carried forward.

The Value of Shipping to the Public.

It was very desirable that those large numbers of our fellow-subjects who necessarily had no special knowledge of the question should realise the service which British shipping rendered to the whole community. Next to agriculture, shipping was the most important national industry, even in times of peace; indeed, seeing our insular position and the widespread character of the British Empire, dependent upon oversea trade for its very existence, it was perhaps, not too much to say that agriculture should take the second place. Might not we all feel gratified that fully one-half of the effective ocean tonnage of the world had been built and was owned in these small islands?

One had recently heard it said that "The Navy has saved the shipowner." While fully recognising the splendid and effective services of our Navy, might it not with justice be replied that "without the co-operation of the mercantile marine the Navy could not have performed its part"

Let them consider for a moment what the position of this country and her Allies would have been on the outbreak of the war if during the last few decades British shipowners, in competition with their German and other rivals had not by their enterprise, often with a totally inadequate return, provided the means not only of supplying the Navy with its manifold necessities, but of transporting from these shores and from distant parts of the Empire armies of unprecedented magnitude, and food from all parts of the world. It seemed quite clear that in the national interest, whether in peace or war, everything should be done to maintain and develop the strength and efficiency of the mercantile marine, and it was,

therefore, important that the possible effect of recently-imposed taxation of profits should be carefully considered.

The Excess Profits Tax.

Needless to say, those who owned shipping property were as anxious as any section of the community to contribute their share in the hour of the nation's necessity, and the principle of the excess profits tax of 50 per cent. was one to which no reasonable objection could be raised, but all depended upon the method of its application. Fortunately, the Chancellor of the Exchequer and other members of the Government were men with full knowledge of economics, who appreciated the importance of not crippling any branch of industry which was vital to the trade of the country. In view of Mr. McKenna's speech when introducing the Budget they might feel assured that shipping companies would be allowed to allocate from their earnings adequate sums to reserves to meet future contingencies, and companies such as this, which in the past had left indifferent results in comparison with other undertakings, would receive that special consideration indicated in Mr. McKenna's speech. If this were not done, the outlook would be discouraging, and even disquieting.

High Working Costs.

It must not be overlooked that, although the war has led to a great advance in freights, the practical monopolising of shipbuilding yards by the Government had so restricted the output of tonnage as to render it impossible to obtain the delivery of new vessels for a long time to come, and had forced up the price of ships to a very high level. It followed, therefore, that shipping companies requiring to renew and extend their fleets would be much handicapped by the high initial cost of new ships, more particularly if adequate reserves were not ready for such purposes.

As stated in the report, the expenses of working had also enormously increased, and when the fall in freights took place after the war, it was almost certain that the cost of production and of the working of vessels would for a long time remain relatively high. Ships under neutral flags were at the present time earning much larger profits than British tonnage, thereby providing a fund to enlarge their activities in the future, and when peace came the large German mercantile fleet now lying idle in all parts of the world would at once emerge and enter into very serious opposition to us in the freight market. This combined competition would be hard to meet, and it would go ill with the maritime supremacy of Britain if taxation unwisely applied should be found to have deprived our shipowners of the means to cope successfully with their rivals. Any decline of our shipping would have a disastrous effect on the well being of the Empire.

Commandeering Methods.

Quite apart from any direct exceptional taxation, it might be mentioned that the shipping industry had made a large contribution to the National Exchequer, owing to something like one-fourth of the total tonnage being requisitioned by the Admiralty at rates of freight very much below those ruling in the open market. Now that the tax on excess profits was to be imposed it would appear but just, and at the same time would be of assistance to the Director of Transports in the provision of tonnage, if the rates paid by the Admiralty were revised and made in reasonable relation to the market. To relieve the situation in the freight market one might be allowed to suggest that the greatest care should be taken by the Transport Department to utilise steamers in the most economical manner, and also that there should be more co-ordination among the different departments of the public service, so as to bring about the removal of the serious congestion at many ports, the neglect of which, by tying up tonnage unnecessarily, had intensified the stringency of freights.

In conclusion the speaker said the marvellous growth of the trade of this country and the pre-eminent position she held were due to the individual energy and enterprise of her people. Any attempt on the part of the Government to take over the mercantile marine—which idea had been mooted in certain quarters—would be fraught with danger to the State. This question had recently been dealt with in a masterly and convincing manner by Mr. Booth, the Chairman of the Cunard Steamship Company, in his address to the Liverpool Steamship Owners' Association, which it was to be hoped had been widely read.

It was inconceivable that those who were in authority would at this crisis of our history, by departing from basic economic principles, run the risk of sapping the very foundations upon which the greatness of the Empire rested, and, despite the difficulties which might lie before us, we could look forward with confidence to the future.

The motion was seconded by Mr. F. Denning, J.P., and carried.

COMPANY REPORTS.

SS. "Alton."—The *Alton*, managed by the Thomas Turnbull Steamship Company, Whitby, has paid a dividend of £125 per one-sixty-fourth share.

SS. "Bernard."—An interim dividend of £150 per one-sixty-fourth share has been paid by the *Bernard*, for whom Turnbull Bros., of Cardiff, are managers.

West Hartlepool Steam Navigation Company, Ltd.—Interim dividend of 5½ per cent. (11s. per share), less income-tax, on the preference shares for the year to June 30, 1911.

Clan Line Steamers, Ltd.—Interim dividend of 25s. per £10 share, free of income-tax, on the ordinary shares for the half-year ended June 30. The dividend a year ago was 3 per cent., which, at the end of the year, was made up to 15 per cent.

Smith's Dock Company, Ltd.—As all their works have been made controlled establishments as from August 18, it has been decided to carry the financial year to that date, instead of terminating it on June 30, and to pay a further interim dividend at the rate of 7½ per cent., making 10 per cent. for the year. The question of a final distribution will be considered later.

Hochseefischerei J. Wieting A.G., Bremerhaven.—The net profit for the year ending June 30 last was £3,170, from which £2,950 (£3,670 the previous year) was distributed as 4 per cent. (5 per cent. last year) dividend. During last winter working was practically suspended by the war and the last catch brought in, in August, 1914, was mostly wasted due to lack of rail facilities. In some areas fishing was recommenced last spring.

Cuban Steamship Company, Ltd.—The report for the year ended May shows a profit of £39,412, and £7,693 was brought forward. Interim dividends of 2½ and of 10 per cent. have already been paid, and a further 12½ per cent. is recommended, making 25 per cent. for the year, £11,000 is written off for depreciation, and £12,481 carried forward, as against £7,893 brought in. For each of the last two years the dividend was 7½ per cent.

Leerer Heringsfischerei Akt. Gesell.—This company did not add to its fleet (14 vessels) during the year ending June 15. The total catch was 6,033 tons (26,956 last year), fetching £9,300 (£45,900), *i.e.*, an average of 31s. (34s.) per ton. Including writing-off two boats sunk by our navy, the loss on the year's working was £13,500. The position has been reported to the Government, and the company hopes to be indemnified after the war! No dividend has been paid for four years past and the fleet is still idle.

Deutsche Seefischhandels A.G., Hamburg.—A dividend of 12½ per cent. (nil in previous year) is declared. Business has been better than was anticipated. The company has depended partly on the catches of German trawlers and partly on imports from neutral countries. Market branches at Geestemünde and Cuxhaven are closed, due to shortage of labour. Including £1,000 (£355) brought forward, the gross profit was £18,800 (£13,100) and the net profit £8,000 (£2,680). Favourable results are expected for the current year.

Emdener Heringsfischerei A.G.; Heringsfischerei Dollert A.G.; Grosser Kurfurst Heringsfischerei A.G., Emden.—These three concerns have been crippled by the war; none of them shows a net profit and none pays any dividend for 1914-15. The losses are respectively three, four, and three vessels, and their catches and gross receipts are: 9,275 tons, £14,700; 5,070 tons, £8,050; and 5,630 tons, £8,920. The Grosser Kurfurst Company realised £42,000 on sales during the previous year and thence paid 9 per cent. dividend.

Nautilus Steam Shipping Company, Ltd.—The report for the year ended June 30 states that after deducting all management charges, audit fees, and income-tax, the profits for the year are £74,153, to which is added £14,414 brought forward from last annual account, making a total of £88,567. Of this the following sums have been appropriated:—Debenture and other interest, £4,476; interim dividend (2 per cent.) January, 1915, £2,863; interim dividend (3 per cent.) April, 1915, £4,294; written off to depreciation account, March 22, 1915, £15,000; added to reserve account, March 22, 1915, £5,000. It is recommended that a further sum of £15,000 be written off capital expenditure, £10,000 added to reserve account, and a final dividend of £1 2s. 6d. per share (5 per cent.) be paid, making 10 per cent. for the year, with a bonus of 11s. 3d. per

share 2½ per cent., leaving £21,198 to be carried forward to next account, and providing for payment of the tax on war profits. The purchase of the *Eddystone* at a moderate price is a valuable addition to the company's fleet, which now consists of 13 steamers aggregating 51,310 gross registered tons, and a deadweight capacity of 84,000 tons. The company's regular line between the United Kingdom and ports in Chile, Peru, and Ecuador is maintained, but with fewer sailings, owing to requisition by the Government of four of the steamers for war service. A subscription of £30,000 was made to the 4½ per cent. War Loan. This provides investment, to this amount, for the reserve fund.

Port Talbot Graving Dock & Shipbuilding Company, Ltd.—The report for the year ended July 31, states that the profits for the year amounted to £8,251 which, after deducting debenture and loan interest, leaves a net profit for the year's working of £6,159. Added to this is a balance brought forward from last statement of £3,454, making a total balance of £9,613. Of this amount the directors recommend that £630 be added to the reserve fund for the purchase of and/or redemption of debentures, and that out of the remaining balance a dividend be paid on the ordinary shares at the rate of 10 per cent., free of income-tax, for the past year, which will amount to £4,545, leaving a balance of £4,438 to be carried forward to next year's account. Net profits and dividends since 1912 were as follows :—

Year	Profit. £	Dividend. Per cent.
1912	2,[illegible]0	3
1913	4,347	5
1914	3,751	5
1915	6,159	10

Melbourne Steamship Company, Ltd.—The report for the six months ended June 30 shows a net profit of £16,426, which, with £10,214 brought forward, made £26,640 available. A dividend at the rate of 10 per cent. and a bonus of 6d. per share on the ordinary shares, and a dividend of 6 per cent. on the preference shares absorb £16,080, and £10,560 is carried forward. The following comparison may be made :—

	Half-year ended June 30.		
	1913.	1914.	1915.
Net profit	£8,811	£7,365	£16,426
Dividend, ordinary, per cent. per annum	8	7	10
Bonus	—	—	5
Dividend, preference, per cent.	—	—	6
	£	£	£
Insurance and reserve fund	49,315	41,733	44,501
Depreciation account	79,383	93,352	108,852
Sundry creditors	53,954	26,559	51,343
Steamships, freehold property, &c.	329,355	337,904	389,214
Cash, shares, &c.	14,543	13,577	15,775
Sundry debtors	38,321	34,814	49,958
Cash in hand and in transit	—	6,738	10,845

The report states that the fleet of steamers has run without serious mishap and has been kept fully employed, a factor which is evident from the large increase in profits. A good percentage of the single men of the staff have enlisted for active service.

Blohm & Voss, Hamburg.—The balance sheet for the year ending June 30, 1915, and corresponding figures for the preceding year are as follows :—

	1914-15. £	1913-14. £
Gross receipts	258,000	163,000
Including brought forward	1,625	1,840
Allocated to		
Insurance	5,140	5,050
Debenture interest	16,450	17,100
Employment insurance	23,600	29,300
War aid	27,700	
Depreciation	119,000	77,000
Net profit	67,000	34,500
Reserve	14,700	4,900
Preference dividend (per cent.)	16,200 (5½ %)	16,200 (5½ %)
Ordinary ,, ,,	17,600 (6 %)	11,880 (4 %)
Profit share	16,500	
Carried forward	2,020	1,630
Assets		
Floating docks	494,000	349,000
Buildings and shipways	659,000	690,000
Machines, &c.	783,000	793,000
Ships, &c., building	1,760,000	2,110,000
Materials	292,000	262,000
Stocks	26,200	32,500
Debtors, cash, &c.	179,000	306,000
Payments on ships	2,620,000	2,630,000
Creditors	511,000	864,000
Reserve fund	53,900	39,100

War Profits of Neutral Shipping.

The accompanying figures are useful for reference purposes and give some insight into the effect of the war on neutral shipping companies. Opposing factors have been at work. On the one hand freights and the demand for tonnage have risen to unprecedented levels and on the other hand war risks and blockades have closed some shipping routes. Of the 46 Dutch and Scandinavian concerns covered by the summary, 7 show increased dividends, 17 show the same dividend as in the preceding year, and 14 show decreased dividends. As the year 1913 was exceptionally favourable, it is noteworthy that so many companies distributed equal or higher profits. This favourable result is due entirely to the war, for freights were low during the first half of 1914. Naturally profits would have been much higher could neutrals have evaded the restrictions and perils of war, whilst taking advantage of its opportunities.

Dividends of Neutral Shipowners.

	1914-15.	1913-14.
Dutch Owners.		
"Nederland" Stoomvaart Maats.	7½	10
Holland-America Line	17	15
Rotterdamsche Lloyd	7½	10
Koninklijke Nederlandsche Stoomboot Maats.	6	8
Koninklijke Hollandsche Lloyd	3	6
Koninklijke West Indische Maildienst	5½	6
Van Nievelt Goudriaan & Co.	16	26
Java-China-Japan Lijn	6	8½
W. H. Muller & Co., Rotterdam	8	8
Stoomvaart Maats., Nederlandsche Lloyd	9	9
Hollandsche Stoomboot Maats.	13	8
Overzeesche Vrachtvaart Maats.	23	10
Stoomvaart Maats., Amsterdam	15	?
Danish Owners.		
Det Forenede Dampskibs-Selskab	8	8
Dampskibsselskabet Danebrog	12	20
Nordenfjeldske Dampskibs Selskab, Det	8	10
SS. Co. of 1896	12	15
Hansa SS. Co.	10	10
Torm SS. Co.	12	10
Neptun SS. Co.	12	15
Danmark SS. Co.	8	10
Myren SS. Co.	10	10
Germ SS. Co.	10	10
Carl SS. Co.	10	10
Skjold SS. Co.	8	8
Skjalm Hvide SS. Co.	8	8
Skandia SS. Co.	10	12
Dania SS. Co.	10	10
Tore SS. Co.	4	?
Progress SS. Co.	8	8
Gefion SS. Co.	8	8
East Asiatic Co.	10	10
Dansk-Franske Dampskibsselskab A/S	10	?
Dampskibsselskabet paa Bornholm of 1866	5	8
Swedish Owners.		
Stockholms Rederiaktiebolag Svea	9	8
Transatlantic SS. Co.	6 (7)	6
Svenska Lloyd	12	10
Svenska Amerika Mexico Linien	18	0
Angfartygs. Aktieb., Gota Kanal	6	6
Norwegian Owners.		
Bergenske Dampskibsselskab	7½	7
Nordenfjeldske Dampskibsselskab	7	7
Norske Amerika-Linie	8	5
Excelsior SS. Co., Christianssand	32	20
Selmerke SS. Co., Drontheim	10	?
Stavanger D.-S.	6	5

MANUFACTURING AND INDUSTRIAL NOTES.

The steam trawler *Earl Kitchener*, owned by Hellyers, Ltd., brought into Hull the other day about 1,800 kits of Iceland cod, halibut, and other fish caught in a three weeks' trip. The cargo realised about £3,000, which is said to beat all records from Iceland.

In a communication to us, Websters, Ltd., manufacturers of ships' compositions, of Hull, state that an Ellerman liner which had been treated with their compositions was recently dry-docked after trading to South African, Indian and South American ports, and she turned out free from growth of shell or marine vegetation of any description, so that only a "touch up" and one coat of Websters' composition were applied instead of the two coats it was intended to apply. Similar good results were obtained on the *Tennyson* belonging to Glover Bros., of London. The firm have issued a circular giving other instances and a list of the lines now using their product.

PORT NOTES.

Bombay.—The Government of India have sanctioned the raising of a 4 per cent. loan of £457,600 by the Bombay Port Trust.

Shat-el-Arab.—A powerful suction dredger is being despatched to the Persian Gulf, and will be engaged in dredging the bar in the Shat-el-Arab. At present vessels drawing 19 ft. can cross at high tide.

London.—In view of the heavy arrivals expected next season, the Port of London Authority have decided to erect sheds at the Royal Victoria & Albert Docks sufficient to accommodate 50,000 to 60,000 bales of wool. It is anticipated that the sheds will be completed before the end of the year.

Hong Kong.—The Legislative Council of Hong-Kong has set aside a small sum for dredging a portion of the harbour for a 30-ft. approach to and berths alongside a new wharf which is to be erected. The Colonial Government has agreed to dredge two berths alongside the proposed wharf to a depth of 30 ft. l.w.o.s.t. This is said to be the first work of the kind undertaken by the Government in Hong Kong.

Chinkiang Harbour.—The spit has moved a considerable distance down stream and has narrowed the channel. A report by Mr. Blom, of the Netherlands Harbour Works Company, seems to indicate that the Nien-yu-tao creek which debouches between the spit and the concession might possibly be regulated, and water from the main stream of the Yangtze deflected to keep open a channel. It is unlikely that effect will be given to the suggestion owing to the great cost as compared with the volume of trade. The probable solution of the difficulty will be that the hulks opposite the British concession will be disconnected from the shore and placed in deep water.

Hawaii Islands.—The Inter-Island Steam Navigation Company, Ltd., is making arrangements to keep in the Hawaii Islands a stock of 20,000 tons of coal. This coal will be both Australian and Japanese, but mainly Wallsend coal from Australia. For discharging cargoes there is in use a Hunt conveyor capable of discharging coal at the rate of 200 tons per hour. When not in use vessels can also be bunkered at this conveyor at the rate of over 100 tons an hour. There is also an automatic coal-handling barge with a capacity of about 500 tons, which can discharge 125 tons per hour. A larger barge is now available with a capacity of 1,000 tons, and equipped with conveyor machinery capable of discharging 250 tons per hour.

São Francisco do Sul.—The British Vice-Consul at São Francisco do Sul states that the harbour at that port may be considered the best between Santos and the River Plate, and affords good shelter both inside the port and also outside, fronting the bar, at the Graça Islands. At mean low water the depth at the bar is about 25 ft. The sunken rocks situated inside the port are the only drawback. These rocks, however, are marked with buoys. On account of its good harbour and the network of converging railways—to be further extended—São Francisco will tend more and more to become the distributing and commercial centre for the greater part of the State of Santa Catharina, the greater part of the south of the State of Parana and a further vast district to the west of the centre of South America.

Tientsin.—The latest Consular report on the trade of Tientsin states that the programme sanctioned by the Hai Ho Conservancy, under the Taku bar improvement scheme, called for a channel that would enable a steamer of 12 ft. draught to pass into the river on an ordinary neap tide and of 14 ft. on an ordinary high-water spring tide. This provided for a margin of 1 ft., and the channel depth aimed at was 7 ft. Taku datum. Last year, however, was marked by the prevalence of easterly winds rendering dredging operations extremely difficult. It has been clearly ascertained that the silting on the bar is due for the most part to the powerful wave action created by these winds, and that the soil transported by the river is only responsible to the extent that it provides the sea with more material for building the bar. The winter of 1914-15 has been one of the severest on record. Intense cold combined with a series of easterly gales rendered the operations of the two ice-breakers ineffective, and from January 11 to February 27 the port was practically closed. Experience shows that while the ice breakers found no difficulty in breaking through the ice in the river, the task of keeping open a further channel through some 30 to 40 miles of sea ice driven in towards the bar by the prevalent winds was hopeless. Optimists contend that conditions were exceptional, and that the 1914-15 season should not be taken to denote failure to keep the port open. Merchants generally feel doubtful of Shanghai shippers reserving cargo for Tientsin in future winter seasons.

NEWS PARAGRAPHS.

New N.Y.K. Boats.—The Nippon Yusen Kaisha has decided to build six steamers of 7,500 tons each and three of 3,200 tons each during the coming year. Orders for five of them have already been given to the Mitsu Bishi Dockyard and Engine Works, while the Kawasaki Dockyard Company has received the contracts for the remaining four.

Galveston Salvage Tenders Rejected.—Although the Henderson Iron Works, Mobile, gave the lowest tenders on the contract for salving the four steamers ashore at Galveston and Texas City, all tenders have been rejected by Capt. T. J. Anderson, of the Salvage Association and new ones are being asked. The Henderson Company's tender was £54,400.

Traffic and the War.—The effect which the war has had on Manx traffic is revealed by the annual figures of the Isle of Man Steamboat Company, which cover the period from May 1 to yesterday. During this time their steamers made 672 trips, covering a distance of 48,076 miles, this being a decrease from 1913, the last complete season, of 1,759 trips and 129,882 miles.

U.S. Coal for Denmark.—It is reported from Washington that a cargo of coal recently despatched from the United States, which has just arrived at Copenhagen, is to be tested by the Danish Government in the hope that it may be found available as a substitute for Welsh Admiralty coal, which cannot be obtained at present. The price of this American coal c.i.f. Copenhagen is said to be $13·38 per ton.

Italian Shipping Company's Generosity.—The Venetian Steamship Company operating a line from Genoa to India has agreed to pay the families of seamen who are serving in the war the full pay they would have earned had they remained at sea, provided they have been with the firm for not less than five years. Those who have served between one and five years will receive half-pay. The offer applies to officers, engineers and men.

Ships from "China."—A Reuter telegram from Copenhagen, dated September 28, states: "Owing to the extraordinary pressure of work in the Scandinavian shipbuilding yards, the Brusgaard Steamship Company, of Drammen, Norway, have ordered three steamers from China. Thus, for the first time in history, China is a competitor with the European shipbuilders. Two steamers will be delivered in 1916 and the third in 1917." The report, however, does not give the name of the yard.

Shortage of Steamers in Australia.—According to the *Sydney Daily Telegraph*, in consequence of the great difficulty experienced by shipping companies in securing sufficient steamers to cope with the large amount of cargo waiting to be shipped at various Australian and American ports, it is announced that sailing ships have been secured to load at New York for Australian ports. The vessels have been chartered by the American and Australian Line to next January.

Strike at Thornycroft's.—The Minister of Munitions stated in the House of Commons last week that some 1,700 men, who were employed in urgent warship construction in Thornycroft's yard at Southampton, had been on strike for some days against the employment of men who were released from the Colours for munition work, on the ground that the latter were non-unionists. The men struck without the knowledge of their trade union, and had remained on strike though the union had instructed them to return to work. Proceedings were being taken against a number of the men under the Munitions Act.

Contravening Admiralty Regulations.—At Lancaster, on Saturday, Captain Edward R. Hately, of the Laird liner *Thistle*, was charged with an offence against the regulations issued by the Admiralty under the Defence of the Realm Act. It was alleged that the *Thistle* was discovered 5 miles inside a prohibited area in the Irish Channel whilst on a voyage from Londonderry to Glasgow. It was suggested that the idea was to shorten the journey in this way, instead of going round the course set by the Admiralty. The vessel, on being seen by the lieutenant-commander of a patrol boat, was signalled to stop, then the whistle was sounded, but as the *Thistle* did not obey a gun was fired. The defence was that there was no attempt to cross the area, but that the first mate, who was

on the bridge at the time altered the ship's course to avoid a flotilla of drifters that came out from the land, and in that way he got the *Victoria* about a mile inside the prescribed area. The magistrates imposed a fine of £20.

U.S. "California."—The keel of the new United States battleship *California* will be laid at the New York Navy Yard on October 14. The *California*, which will be constructed on the same general lines as the *Mississippi* and *Idaho*, will be the first electrically-propelled warship of her class in the world. Her armament will include twelve 14-in. guns, mounted in four triple turrets. She will displace 32,000 tons and will have special protection against submarines.

Poor Consolation.—In discussing the profits of neutral shipowners, Herman Stockel in *Harvest* derives much pleasure from the expectation that the substantial profits and increased fleets of neutral shipowners and the extension of neutral shipyards will inflict permanent damage on British interests. The injury to German shipping will, he contends be less serious because "our mercantile marine does not, like the British, serve the whole world, but only the scope of German commerce." What an admission for a Hun!

German Liners to be Measured for Panama.—Application has been made to the United States Bureau of Navigation of the Department of Commerce for the measurement, under Panama Canal rules, of Norddeutscher Lloyd and Hamburg-Amerika Line boats now laid up in Hawaiian ports owing to the war. The request was forwarded by the Collector of Customs at Honolulu with a letter from the agents of the steamship lines setting forth that the surveyor of the port of Boston had already measured the Hamburg-Amerika liners *Amerika* and *Cincinnati*. There are three Hamburg-Amerika and four Norddeutscher Lloyd ships at Honolulu. The measurements will probably be made.

West American Services.—Advices from San Francisco state that, owing to the withdrawal of the Pacific Mail boats from the San Francisco-Honolulu service, and the inability of the Matson Navigation Company to handle the amount of business now offering, Hawaii is losing a large percentage of Australian tourists, and British Columbia is getting much of the through travel that hitherto was diverted at Honolulu to San Francisco. An arrangement between the Canadian-Australian Line and the Matson Navigation Company was made some time ago, before the present passenger congestion, by which passengers on through tickets from Australia could stop off at Honolulu and have their tickets honoured on Matson boats to San Francisco. The Canadian-Australian line boats in the Sydney-Victoria service only make a stay of a few hours at Honolulu.

Japanese Coal.—According to the *Japan Mail* the Inter-Inland Steam Navigation Company has contracted with the Hokkaido Tanko Kisen Kaisha for the supply of 130,000 tons of Yubari coal at Honolulu. The first shipment has just been made. This is the first big export of Japanese coal to Hawaii, which has heretofore bought Australian coal. The *Japan Chronicle* of July 30 states that Japanese collieries have curtailed their output by over 20 per cent. this year as compared with last. In spite of this stocks are increasing. According to the latest investigations quoted by the Mainichi of Osaka, stocks of the collieries amount to 546,000 tons, and those on the Moji and Wakamatsu markets to 738,000 tons, totalling 1,284,000 tons. When small stocks in other parts of the country are taken into account, the grand total will exceed 1,300,000 tons.

Prize Money.—Mr. Asquith, replying to Sir A. Markham, said that on March 31, 1915, the Paymaster-General held on behalf of the Admiralty Division of the Supreme Court of Judicature in prize a sum of £1,862,476 11s. 6d. Of this, £577,676 9s. 6d. was net proceeds of vessels, freight, and cargo condemned; £1,282,107 4s. 5d. net proceeds of freight and cargo awaiting adjudication or release; and £2,692 17s. 7d. miscellaneous, mainly freights on detained vessels. The amount in the hands of the Paymaster-General on September 23, 1915, was £3,754,600 15s., but details of the composition of this balance are not yet available. The figures include all cases falling within the jurisdiction of the Prize Court in this country, whether captures by His Majesty's ships or seizures by Customs officers. The ultimate destination of prize moneys is under consideration, and in the meantime it would not be regular to pay them into the Exchequer. The moneys are in the hands of the Paymaster-General, who deals with them in accordance with the directions of the proper officers of the court.

Seamen's Institute for Panama Canal.—The Canal Authorities have offered the American Seamen's Friend Society the lease of a lot on the waterfront of Cristobal, in the area reserved for the buildings of steamship companies and other shipping interests, at a nominal rental of $1 per year, for the erection of a building to house a Seamen's Institute. In the month of July the Canal and its terminal ports were visited by as many as 14,136 sailors, 9,824 having been examined by the quarantine officers at Cristobal and Colon, and 4,312 at Balboa and Panama. These numbers will increase with the development of traffic, and although not all of the vessels moor at the Canal docks, and not all of the crews of those which do are allowed to land, the number of seamen coming ashore is believed to be sufficiently great to warrant the establishment of this accommodation.

Sydney to Darwin Service.—Mail advices from Melbourne state that the contract recently entered into by the Minister for External Affairs on behalf of the Federal Government and Gibbs, Bright & Co. on behalf of the Eastern & Australian Steamship Company, Ltd., for a service between Melbourne or Sydney and Port Darwin provides for a subsidy of £3,000 a year, or £250 for each complete round trip. The term of the contract is two years from May 1 last, and the subsidy is to be paid in eight equal payments of £750. A monthly service is to be maintained by a steamer of not less than 1,000 tons register and not more than 25 days is to be occupied on each trip between Melbourne and Darwin, nor more than 15 days between Sydney and Darwin. The Company is required to give the Minister at least 14 days' notice of its intention to despatch a steamer on or about a certain day, and also to give to the Administrator of the Northern Territory at least seven days' notice of the sailing of any steamer from Darwin. Special rates are fixed for the carriage of "Government passengers and cargo," and the contract provides for slightly lower payments where non-union labour is employed.

British Wrecks Reported in September.—The number and net tonnage of British vessels respecting the loss of which reports were received at the Board of Trade during the month of September, 1915, and the number of lives lost, are as follows:—

Description.	Number.	Net tonnage.	Lives lost.
Sailing	21	5,214*	19
Steam	47	63,425†	102‡
Total	68	68,639	121

* Including 7 sailing vessels of 2,288 tons sunk by German warships.

† Including 20 steamers of 47,231 tons sunk by German warships, 5 steamers of 5,474 tons sunk by mines and 4 steamers of 2,209 tons sunk by mines or by German warships.

‡ Including 43 lives lost in steamers sunk by German warships, 12 lives lost in steamers sunk by mines and 17 lives lost in steamers sunk by mines or by German warships.

The figures include the losses of 10 sailing vessels of 2,802 tons and 5 steamers of 715 tons belonging to British possessions abroad, involving the loss of the lives of 7 persons, of whom 2 were lost in sailing vessels and 5 in steamers.

Chartering Ships for Australian Wheat.—The *Melbourne Age* states that the ship-chartering scheme propounded by Mr. Hughes, Commonwealth Attorney-General, for the transport of surplus wheat at the coming harvest, has been approved by the Ministerial conference, with certain modifications to meet the objections of the Victorian Government and the criticism of mercantile firms. The result is that the exportation of wheat and flour from the next crop will be controlled absolutely by the Commonwealth Government, in co-operation with the wheat shipping States—Victoria, New South Wales, South Australia and Western Australia. The Commonwealth Government alone will arrange the charters. If necessary the exportation of wheat and flour will be prohibited except in the ships chartered by the Commonwealth authorities. There will be nothing to prevent any firm chartering ships if they choose to do so, but it will rest with the Commonwealth to either approve or prohibit export by these privately chartered vessels. The original scheme propounded by Mr. Hughes contemplated that the whole business would be conducted by the Commonwealth Government, with the limited co-operation of the State Governments, through Gibbs, Bright & Co. and Elder, Smith & Co., who were to act as agents. As a result of the pressure brought to bear by the Victorian Government that arrangement has been modified to the extent of taking the States concerned more freely into partnership. The two firms mentioned will still have the exclusive right of chartering vessels, but the allotment of the ships thus to be made available will be determined by the State Ministers of Agriculture.

OFFICIAL NOTICES AND SHIPS FOR SALE.

FOR SALE.

(PARTICULARS NOT GUARANTEED.)

Folio 9047.—New Steamer now building. About 7,900 tons d.w. on about 22 ft. 3 in. draught. Single Deck. Long Bridge. Triple Engines. Three S.E. Boilers. Estimated speed 10 knots on about 26 tons. Do not anticipate delivery before January, 1916.

Folio 9059.—Built 1906. Surveyed 1914. About 6,850 tons d.w. on about 22 ft. 5 in. draught. Single Deck. Triple Engines. Three S.E. Boilers. Speed about 9 knots on about 20 tons.

Folio 8721.—Built 1897. Surveyed 1914. About 5,850 tons d.w. on about 23 ft. 10 in. draught. One Deck and Spardeck. Triple Engines. Two S.E. Boilers. Speed about 9½ knots on about 21 tons.

Folio 8987.—Built 1908. Surveyed 1913. About 5,400 tons d.w. on about 20 ft. 11 in. draught. Single Deck. Triple Engines. Two S.E. Boilers. Speed about 9½ knots on about 17 tons.

Folio 9030.—Built 1899. Surveyed 1912. About 4,800 tons d.w. on about 20 ft. 1 in. draught. Single Deck. Triple Engines. Two S.E. Boilers. Speed about 9/10 knots on about 17 tons.

Folio 9177.—Built 1895. About 2,800 tons d.w. on about 18 ft. 3 in. draught. Part Awning Deck. Triple Engines. Two S.E. Boilers. Speed about 8 knots on about 10 tons.

For further Particulars, Plans, Prices, &c., apply to:—

THOS. PINKNEY & SONS,
Sunderland.

Telegraphic Address—"Spardeck."

OFFICIAL NOTICES AND SHIPS FOR SALE.

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is noon on Wednesday.

All advertisements should be addressed to—
Shipbuilding and Shipping Record,
Queen Anne's Chambers,
Westminster, London, S.W

"SHIPBUILDING AND SHIPPING RECORD" TABLE OF SHIP SALES.

Name and type.	Tonnage.	Dimensions. Draught in ( ).	Sold by, to	Builders, hull and year.	Machinery and builders.	Remarks.
Almora, s.v. ...	1,856 gr. 1,769 net.	257¼′ × 39¼′ × 22¾′	Akties, Almora (S. W. Marcussen) Lyngör, Norway	W. Hamilton & Co., Port Glasgow (1893)	—	Price about £11,000. Sold in July, 1911, for about £4,800.
Centenario, ss. (ex *Wintering ham*)	3,637 gr. 2,345 net.	346⅔′ × 50¾′ × 22¾′	Ford & Dodero, Buenos Ayres, to Norwegian buyers.	J. L. Thompson & Sons, Sunderland (1907)	24½, 40, 66 × 45 (J. Dickinson & Sons, Sunderland)	Price about £78,000.
Charilaos Tricoupis, ss. (spar dk.)	2,525 gr. 1,610 net.	300′ × 40¼′ × 16′	O. A. Stathatos, Ithaca, to buyers not stated	W. Doxford & Sons, Sunderland (1892)	28, 37, 60 × 42 (W. Doxford & Sons)	Price about £30,000.
Chulmleigh ...	3,997 gr. 2,567 net.	340′ × 48′ × 25½′	Tatem S.N. Co. (W. J. Tatem, Ltd.), Cardiff, to Harris & Dixon, London	Richardson, Duck & Co., Stockton (1900)	25, 42, 65 × 45 (Blair & Co., Stockton)	—
Filinis, ss. (well dk.) (ex *Wastwater*)	2,862 gr. 1,845 net.	320′ × 40′ × 21½′	N. M. Filinis, Syra, to P. Vaglianatos, Braila, Roumania.	E. Withy & Co., W. Hartlepool (1889)	23½, 33, 64 × 42 (T. Richardson & Sons, W. Hartlepool)	—
Katina Andreadi, ss. (ex *Elem Negropontis*), (ex *Riplingham*), re-named **Clara**	2,570 gr. 1,649 net. 4,400 dw.	313 × 44½′ × 20½′ (22½′)	D. F. Andreadis, Piræus, to Pierre Solomon, Bucharest	R. Thompson & Sons, Sunderland (1898)	22, 36½, 60 × 42 (N.E. Mar. Eng. Co., Sunderland)	—
Mesna, ss. (ex *Romsdal*)	3,193 gr. 2,028 net.	330½′ × 47¼′ × 22½′	Akties, Doris (W. Görrissen), Christiania, to H. Ostervold, Bergen.	W. Gray & Co., W. Hartlepool (1908)	24, 38, 64 × 42 (Cen. Mar. E. Works, W. Hartlepool)	—
Obi, ss. (pt. awning dk.)	3,046 gr. 1,951 net. 4,570 dw.	322′ × 41′ × 21½′ (22′ 10″)	Mercantile S.S. Co., London, to British buyers	J. L. Thompson & Sons, Sunderland (1892)	24, 39, 64 × 42 (J. Dickinson & Sons, Sunderland)	—
Otanes, ss. (ex-*Riverdale*)	3,041 gr. 1,872 net.	319½′ × 42½′ × 20⅝′ (22′ 9″)	Cia. de Nav. Olazarre (Garteiz & Mendialdua), Bilbao, to Norwegian buyers	Chas. Connell & Co., Glasgow (1895)	23, 38, 62 × 42 (Dunsmuir & Jackson, Glasgow)	—
Polynitis, ss. (turret dk.)	3,388 gr. 2,177 net.	335′ × 46′ × 24′	O. A. Stathatos, Ithaca, to buyers not stated	W. Doxford & Sons, Sunderland (1898)	24½, 40, 66 × 42 (W. Doxford & Sons)	Price about £33,500.
Purificazione, ss. (ex *Star of England*)	3,584 gr. 2,271 net.	371⅔′ × 44¼′ × 27¼′	T. Gazzalo fu A. Genoa to Soc. Anon. Ilva, Genoa	Workman, Clark & Co., Belfast (1889)	26½, 44, 72 × 48 (J. & J. Thomson, Glasgow)	
Umé Maru (ex *Java*)	4,377 gr. 2,714 net 5,750 dw.	384½′ × 45′ × 27¾′	Goshi Kaisha Harada Shoko, Amagasaki Settsu, to buyers not stated	Caird & Co., Greenock (1892)	28, 46, 77 × 54 (Caird & Co., Greenock)	Price about £39,000.

"SHIPBUILDING AND SHIPPING RECORD" TABLE OF LAUNCHES.

Date of Launch.	Name of Vessel and Type.	Owners.	Builders.	Approx. Dimensions. — L × B. × D.	Propelling Machinery and Builders of Machinery.	Remarks.
Sept. 4	**Annette Rolph,** ss. (cargo)	Hind, Rolph & Co.	Union Iron Works Co. ..	400′ × 56′ × 32′..	G.E. Geared Turbines. 2,400 s.h.p.	9,000 tons d.w. 25′ 9″ draught
Sept. 9	**Whiteaway** (s.y.) ..	Harry Payne Whitney, New York	Cramp's S. & E. B. Co., Philadelphia	175′ × 23′ × 13′..	Geared Turbines	17 knots For shallow-water cruising.
Sept. 11	**Eurana,** ss. (cargo) ..	Union Iron Works Co. ..	Union Iron Works Co. ..	400′ × 56′ × 32′..	G.E. Geared Turbines. 2,400 s.h.p.	9,000 tons d.w. 25′ 9″ draught
Sept. 30	**Brisbane,** H.M.A.S. ..	Commonwealth of Australia	Cockatoo Yard, Sydney, N.S.W.	456½′ × 49½′ × 15½′	Parsons Turbines, 22,000 h.p. = 24·7 knots	Chatham Class. Displ. 5,400. 8 6-in., 4 3-pdr. Laid down Jan., 1913.

"SHIPBUILDING AND SHIPPING RECORD" TABLE OF TRIAL TRIPS.

—	**Clare Island,** ss. (cargo)	A. Guiness, Son & Co., Dublin	Scott & Sons, Bowling ..	—	Aitchison, Blair, Ltd., Clydebank	—
Aug. 28	**Ontario,** No. 2 (car ferry)	Polson Iron Works, Toronto	Ontario Car Ferry Co. Montreal	318′ × 54′ ..	—	For conveying coal cars across Lake Ontario. Carrying cap. 30 cars and 1,000 passengers.
Sept. 2	**Hundvaago** (cargo) ..	H. Ostervold	A/S. Bergens mek. Verksted	267′ × 42′ × 13′	Tr. Exp. 19½, 30, 52 × 36 stroke	11¾ knots.

SHIPPING SHARE MARKET.

year's payment off the arrears of preference dividend. This makes a total

[illegible] good trading results. The net profit is £74,153 as [illegible] and the company is able to distribute a final dividend of [illegible] per cent., making a total dividend for the year of 12½ per cent., which compares with 10 per cent. last year and an average of 7½ per cent. for the previous thirty-three years of the company's existence. It is a result upon which the market is congratulating the [illegible]. These [illegible] results are naturally tending to widen the [illegible] shares, and it is noticeable that public attention is once more directed to the high yields obtainable from some of the [illegible]. A hint was thrown out in our review of the market last week that [illegible] unacquainted with the "inside" of the market at the present time would do well to confine their attention to the leading [illegible]. Investors who desire to have a part in the prosperity of the steamship companies at the present time cannot do better than purchase the old-established and proved dividend-yielding securities.

SHIPPING, SHIPBUILDING, ENGINEERING AND MARINE INSURANCE SHARE LIST.

SHIPPING AND DOCKS.

Name.	Share and paid.	Extreme quotations, 1913.	Last ann. div. or per share.	Yield.	Quotation, July 30, 1914.	Cash price during week.
	£					
African S.S.	20	21½–19½	7	7½	18–20	18–20
Anchor Line ... Deb.	100	95–89	4	4½	93½–85½	91
Anchor Line ... Cum. pref.	10	9½–10	5½	..	10–10½	10
Do. ... ... Deb.	Stk.	88½–98½	4½	4½	104–106	104½
Argentine Nav. ... Cum. pref.	1	29/6–25/–	5	4½	⅞–1⅛	1
Do. ... ... Deb.	Bds.	104½–100	6	6	98–100	99½
Australasian Un. S. Nav. Deb.	Stk.	84½–81½	4	4½	80–83	80–83
Bristol Steam ... "A"	10 (5pd.)	5⅜–4	8	8	4½–5½	5
British & Austrian Nav. Deb.	Stk.	102–101	4½	4½	99½–98½	99½
British India Nav. Deb.	Stk.	101–98½	4½	4½	99½–100	96
Buckeye SS. ... Cum. pref.	2	2½–1½	5½	..	2–2½	2
Cayzer, Line ... ... Deb.	Bds.	102–99	5	5½	91–93	90½–91½
Clan Line ... ... Ord.	10	142–9	15	10½	10½–11	10½
Coast Line ... ... Ord.	£1		10	9	..	1⅛
Cunard SS. ... ... Ord.	1	25/9–23/–	20	7	1½–1⅝	2⅛
Do. ... Cum. pref.	Stk.	103–97½	5	5½	99–101	91½
Do. ... ... Deb.	Stk.	102½–99	4½	4½	101–103	96
Elder Line ... Deb.	Stk.	103–100	4½	5	98–102	90
Elder Dempster ... Cum. pref.	1	1⅛–⅞	5½	5½	⅛–1⅛	⅞
Do. ... ... Deb.	Stk.	105–99½	5	5¼	102–104	9
Ellerman Lines ... Pref. Ord.	10	10⅜–10⅛	9¼	..	10–10⅛	9½
Do. ... Cum. pref.	10	10⅜–10⅛	10	4½	10–10⅛	9½
France Fenwick ... Cum. pref.	5	97/6–92/6	5	6½	4½–5	4½
Furness, Withy ... Ord.	1	34/3–25/6	1	..	1½–1⅝	1
Do. ... Cum. pref.	10	9¾–9¼	5	5½	9⅜–10	8½
General Steam Nav. Ord.	7½	8½–5⅜	6	8	5⅜–5⅝	6½
Do. ... ... Pref.	8	7¼–7⅛	8	8	7⅛–7¼	6½
Houlder Line ... Cum. pref.	5	5⅝–4⅞	Nil	Nil	2⅜–2½	5⅛
Do. ... ... Deb.	Stk.	94½–80	4½	5½	81–86	84½
Houlder Bros. ... Cum. pref.	5	4½–3	5½	6	4⅜–4½	4½
Do. ... ... Deb	Stk.	85–78	4½	5⅛	81–86	82
India Gen. Nav. & Rly. ... Ord.	10	9½–7½	1	4	9–10	8½
Indo-China N. ... Pref. Ord.	5	5⅛–3⅞	6	5½	3½–4½	5⅛
Irrawaddy Flotilla	4	125–114	5	5⅛	120½–128½	—
King Line ... ... Ord.	10	9½–8	8	7½	8½–9½	10½
La Guaira Harbour ... Deb.	Stk.	87–79	5	7	78–80	80
Lamport & Holt ... Cum. pref.	£1	1¼–⅝	8	6	½–1⅛	⅝
Leyland (F.) ... Cum. pref.	10	11–9⅜	10	12½	7½–8½	7½
Do. ... ... Deb.	100	99½–95½	4	4	99–101	—
Mercantile SS. ... ... Ord.	5	8⅞–6⅝	17½	10½	6–6⅝	8½
Do. ... ... Pref.	1	1⅛–1/6	5	5½	¾–1	1⅛
Moor Line ... ... Ord.	10	14–11⅛	15	..	..	..
Nelson Steam Nav. ... Deb.	100	83½–98	..	5½	99½–101½	97½
New Zealand ... ... Ord.	£1	20½–16½	8	4½	4½–5	19½
Do. ... ... Deb.	Stk.	95–92½	..	4½	92–94	89½
Nitrate Producers SS. ... Ord.	5	8⅛–8	17½	6½	7–8½	12½
Do. ... Cum. pref.	5	8/6–7/6	5	5	4½–5	4½
Oceanic Steam. Nav. ... Deb.	100	101–96½	4½	4½	97–99	91
Orient.Stm.Nav.Co. Cum. pref.	10	10½–9⅛	5	5½	9⅜–10	9½
Do. ... ... Deb.	100	99–94½	4½	4½	98–100	97½
P. & O. S. N. ... Cum pref.	100	122½–107	5	5½	109–112	96
Do. ... ... Def.	100	300–270	15	5½	270–290	265
Do. ... ... Deb.	Stk.	91–83	5½	5	84–86	7½
Prince Line	1	25/3–20/–	5	3½	1–1⅛	2
R.M.S.P. ... ... Ord.	100	143–100½	Nil.	Nil.	82–87	81½
Do. ... ... Pref.	Stk.	100⅝–96	5	5½	98–101	89½
Do. ... ... Deb.	Stk.	104⅜–100⅜	4½	4½	101–103	87½
Shaw, Savill & Alb. Cum. pref.	5	5⅜–96/3	5	5	4½–5	4½
Shell Transport ... ... Ord.	1	5½–96/3	30	5⅝	¼–4½	4⅞
Do. ... Cum pref.	10	11⅛–10	5	5	10⅜–10⅝	9½
Sutherland SS. Co.	£1	1⅛–1	20	13⅜	1–1⅛	1½
Union-Castle SS. Cum. pref.	10	10–9⅝	4½	5	8⅜–9½	8½
Do. ... ... Deb.	Stk.	95⅜–92	4	4½	93–95	88½
Union SS. of N. Z. ... Deb.	Stk.	96–91	..	—	—	—
West Hartlepool ... ... Pref.	10	4½–3½	Nil.	Nil	2⅝–3½	9½

INSURANCE.

Alliance	20 (2·4 pd.)	12⅛–11⅜	12/–	6⅛	11⅞–12⅜	8½
Do. (new shares)		14⅛–12⅜	12/–	5½	13½–14½	7½
Indem. Mutual Marine	15 (3 pd.)	10½–8½	1·8/3	6	10–11	9½
London Assurance	25 (12½ pd.)	5¼–19	20	6	5¼–5⅝	12½
Marine Insurance	25 (15 pd.)	38½–36½	45/–	6½	38½–40	35½
Maritime Insurance	10 (2 pd.)	5½–4½	12½	..	8⅛–8½	—
Merchants' Marine Insurance ...	10 (2½ pd.)	6⅝–6⅛	7½	5	4–4½	5½
N. British & Mercantile Ord.	25 (5½ pd.)	47½–45½	45/–	6	40⅝–41½	29
Do. Pref.	Stk.	100½–96½	4	5½	98–100	77½
Phœnix Assurance	10 (1 pd.)	7⅝–7	40	6½	7¼–8¼	5⅝
Reliance Marine	10 (2 pd.)	7⅛–6⅞	17½	4½	7⅜–7⅝	7⅛
Royal Exchange Assurance ...	Stk.	210–196½	10	5½	213–218	191½
Sea Insurance	10 (2 pd.)	20–17⅞	8	4	20–21	20½
World Marine, Limited ...	5 (2 pd.)	25/– –23 1⅛	5	5½	1⅛–1⅛	1⅛

* With arrears. † Includes 2½% bonus.

IRON AND STEEL.

Name.	Share and paid.	Extreme quotations, 1913.	Last ann. div. ½ or per share.	Yield. %	Quotation, July 30, 1914.	Cash price during week.
	£					
Babcock & Wilcox ... ... Ord.	1	69 4½–56 3	16	5⅝	2⅜–2⅝	2⅜
Baldwins ... Cum. pref.	1	22 6–21 3	5½	5⅛	1⅛–1⅛	1⅛
Do. ... ... Deb.	Stk.	100½–100	4½	4½	97–99	99
Bayliss, Jones ... Cum. pref.	1	—	5	7½	⅜–⅝	⅝–1⅛
Bell Bros. ... ... Cum. pref.	10	12⅛–11	6	5½	11⅛–12¼	10½
Do. ... ... Deb.	Stk.	98–96⅜	4	4⅛	96–98	96–98
Bessemer (Henry) ... Ord.	1	1⅜–1⅛	10	8⅛	1⅛–1⅛	1⅛–1⅛
Bolckow Vaughan ... Ord.	1	22/6–19/4½	6	6½	1⅛–1⅛	1⅛
Do. ... ... Cum. pref.	20	21½–20/–	5	5½	20–21	19½
Cargo Fleet Iron ... ... Ord.	1	11/10½–7/6	2½	5	⅛–⅛	⅛
Do. ... ... Deb.	100	91–85½	4½	5½	89–92	86½
Consett Iron Co. ... ... Ord.	1	88/6–74/6	30	9½	3⅜–3⅞	3⅜
Dominion Iron & Steel	Bds.	100½–88⅜	5	6½	83–87	76
Dorman, Long ... ... Ord.	1	21/6–16/9	7½	8⅝	⅜–⅜	1⅛
Do. ... ... Deb.	Stk.	88⅜–85⅜	4	4½	87–90	84½
Ebbw Vale Steel & Iron Ord.	1	18/–16/–	10	11½	⅜–⅜	⅜
Guest, Keen & Nettefids Ord.	1	68.9–61/3	15	5	3⅝–3½	2½
Do. ... ... Cum. pref.	5	5⅜–5⅜	5	4⅝	5⅛–5⅛	5⅛
Do. ... ... Deb.	Stk.	100⅜–95¾	4	4½	96–98	84
Hadfield's Steel Foundry Ord.	1	63/–58 9	22½	7⅛	3–3⅛	3½
Hawthorn (R. & W.) Leslie Ord.	10	13–12	10	7⅝	13⅛–13⅜	13⅜–14
Ibbotson Bros.	5 (4 pd.)	7–5½	10	7½	6–6½	6–6⅜
Jessop (W.) & Sons ... Ord.	5 (4 pd.)	6⅜–6⅜	15	11⅛	5⅞–6⅜	6⅜
Lanarkshire Steel Cum. pref.	10	7½–6½	5	6⅞	5½–6⅜	6
Lysaght (J.) ... Cum. pref.	1	27/6–25/–	5	5	1⅛–1⅜	1⅛
Do. ... ... Deb.	Stk.	108⅜–102⅜	4½	—	104–106	—
Manganese Bronze ... Ord.	1	⅜–⅛	6	11	⅛–⅜	⅜
Do. ... ... Cum. pref.	1	1–⅝	8	6⅛	¾–1	¾
North-Eastern Steel ... Deb.	Stk.	89–92	4½	—	—	—
Palmers Ship & Iron "A"	1	⅝–⅜	Nil.	Nil.	⅜–⅜	⅜
Scott (Walter) ... ... Ord.	1	16/–14/6	5	6½	⅝–⅝	⅝
Do. ... ... Deb.	Stk.	86–82	4	4½	81–82	89–91
Sheffield Forge ... ... Ord.	1	1⅞–1⅝	12½	7	1⅝–1⅞	1⅝
Shelton Iron & Steel ... Deb.	100	99½–90	5	5½	93–98xd	94½
S. Durham Steel & Iron Ord.	1	35/–23 6	10	6½	1⅛–1⅛	1⅛
Do ... ... Cum. pref.	1	20/6–19/–	6	5½	1⅛–1⅛	1⅛
Do. ... ... Deb.	Stk.	95–98	4½	4½	90–92	90–92
Steel Co. of Scotland ... Ord.	10	12⅜–8⅜	5	5½	8½–9	8½
Stewarts & Lloyds Pref. ord.	10	21–20	10	5½	20–21	18½
Do. ... ... Cum. pref.	10	14⅜–13¾	6	4½	11⅜–13⅞	13⅛
Stone (J.) ... ... Cum. pref.	10	9⅞–9	5	5⅛	8¾–9¼xd	9½
United States Steel ... Ord.	100$	71½–50	3	3½	61–61½	85½
Do. ... ... Cum. pref.	100$	113¾–104½	7	6½	112–113	120½
Vickers Ltd. ... ... Ord.	1	43/6–33/3	12½	7½	1⅛–1⅜	1⅛
Do. ... ... Pref.	Stk.	100½–99	5	5½	104–107	100
Do. ... ... Deb.	Stk.	100½–91¼	4	5½	96½–98½	81
Weardale Steel ... Def. ord.	1	21/–17/–	6	7½	⅛–⅛	⅛
Do. ... ... Cum. pref.	1	20/1½–18/–	6	6½	1⅛–1	⅞
Do. ... ... Deb.	Stk.	77–73¼	4	5	77–80	77–80
Workington Iron & Steel Ord.	1	16/6–12/3	8	8½	⅛–⅛	⅛

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Armstrong, Whitworth ... Ord.	1	60 —39/	12½	8	1⅜–2⅜	1⅛
Do. ... ... Cum. pref.	5	95 —84/6	4	5⅛	4⅛–4⅛	3⅞
Do. ... ... Deb.	Stk.	98½–94½	5	6½	96–98	80½
Beardmore (W.) ... ... Deb.	100	96½–91½	4½	5⅛	94–96	89
Brown (John) ... ... Ord.	1 (15s. pd.)	23 —17 9	12½	9½	⅝–⅞xd	11
Do. ... ... Cum. pref.	10	10½–9⅛	5	5⅛	9½–10xd	8½
Cammell Laird ... ... Ord.	5	3½–2⅞	7½	7⅛	3⅜–4⅛	4⅛
Do. ... ... Cum. pref.	5	92/6–79/–	5	6¼	4¼–4⅜	3⅞
Do. ... ... Deb.	100	90½–84½	4½	5⅜	92–94	89½
Dunlop (Jas.) ... ... Ord.	1	18/6–17/6	Nil.	—	⅛–⅜	⅛
Do. ... ... Cum. pref.	1	1⅛–⅝	6	7⅛	⅝–1	⅝
Fairfield Shipbldg Cum. pref.	10	10–7⅜	8	8⅓	—	7½
Fleming & Ferguson ... Ord.	10	20½–12¾	10	6½	14½–14⅔	14½
Gray (Wm.) ... ... Deb.	100	100⅜–100	4½	4½	100-102	100½
Henderson (D. & W.) Cum. pref.	1	⅜–⅛	5	12	⅛–⅛	⅛
Richardsons Westgarth Ord.	1	3/6—1/9	Nil.	Nil.	⅛–⅛	⅛
Do. ... ... Cum. pref.	1	9/9–4/3	Nil.	Nil.	⅛–⅛	⅛
Do. ... ... Deb.	Stk.	70—58	4½	6½	55–58	69½
Simons (W.) ... Cum. pref.	10	10½–10	5	4⅝	10¼–10½	10½
Stephenson (R.) ... ... Ord.	1	66½–53	Nil.	Nil.	—	—
Do. ... ... Deb.	Stk.	66½–83	Nil.	Nil.	—	—
Swan, Hunter & W. R. ... Ord.	1	19/10½–16/–	†1½	10½	1⅛–1	1⅛
Do. ... ... Cum. pref.	1	19/9—17/9	5	5	1⅛–1	1⅛
Do. ... ... Deb.	Stk.	90½–88	4¼	4½	90 - 93	90 - 93
Thornycroft (John I.) ... Ord.	1	27/6—12/6	8	8	⅝–¾	⅝
Do. ... ... Cum. pref	1	19.3—11/3	6	7⅜	⅝–¾	⅝
Do. ... ... Deb.	100	94—91	5	5½	88–92	93
Wallsend Slipway ... Ord.	1	1⅛–⅛	10	—	1⅛–1⅛	—
Do. ... ... Cum. pref.	1	20/—20/–	5	—	1⅛–1⅛	—

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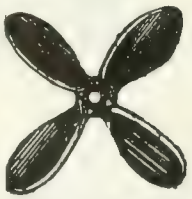

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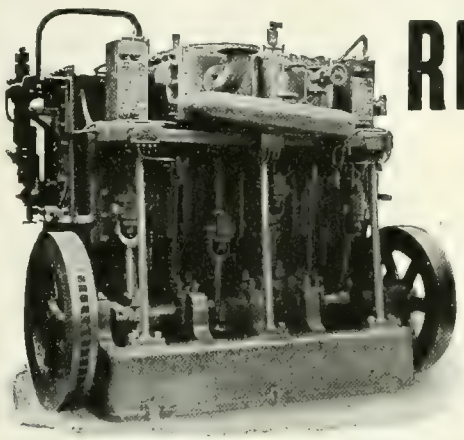

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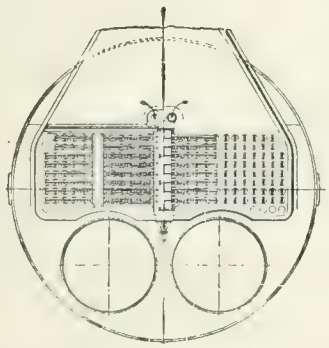

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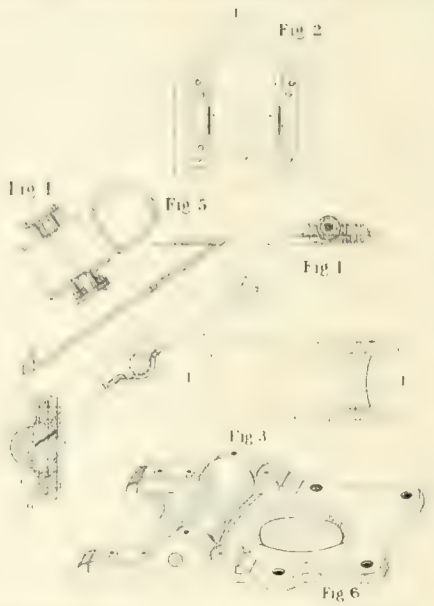

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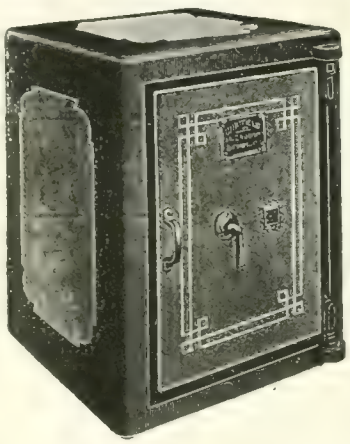

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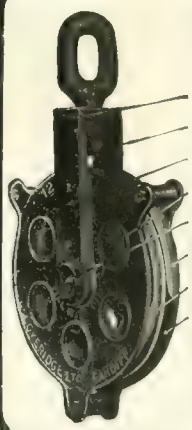

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BEMAL CONDENSER TUBES—
Yorkshire Copper Works, Ltd., Leeds.

"BITUMASTIC" ENAMEL MANUFACTURERS—
Wailes Dove Bitumastic Ltd., 5, St. Nicholas Buildings, Newcastle-on-Tyne.

BLINDS—
Laycock, W. S., Ltd., Victoria Works, Millhouses, Sheffield.

BLOCKS—
Bullivant & Co., Ltd., 72, Mark Lane, London, E.C.
Higginson & Co., 7, Hurst Street, Liverpool.

BLOWERS—
Allen, W. H., Son & Co., Ltd., Queen's Engineering Works, Bedford.
[Belfast.
Davidson & Co., Ltd., Sirocco Engineering Works,
Keith, James, & Blackman Co., Ltd., 27, Farringdon Avenue, London, E.C.

BOATS—
Crichton, J., & Co., Saltney Shipyard, Chester.
Leitch, John, & Co., The Ferry, Renfrew, Scotland.

BOILERS—
Central Marine Engine Works, West Hartlepool.
Elliot & Jeffery, East Dock, Cardiff.
Harris Bros., Ltd., Cambrian Dry Docks, Swansea.
Hawthorn, R. & W., Leslie & Co., Ltd., St. Peter's, Newcastle-on-Tyne.
Howden, James, & Co., Ltd., Scotland St., Glasgow.
Perman & Co., Ltd., 82-83, Fenchurch Street, E.C.
Wallsend Slipway & Engineering Co., Ltd., Wallsend-on-Tyne.
White, J. Samuel, & Co., East Cowes, I.W.

BOILER CIRCULATORS—
Beresford Eng'n'ring Co., Beresford Lane, Cardiff.

BOILER CLEANER—
Jones, Fredk., & Co., Ltd., Perren Street, Kentish Town, N.W.

BOILER COMPOSITION—
Jones, Fredk., & Co., Ltd., Perren Street, Kentish Town, N.W.

BOILER COVERING—
Jones, Fredk., & Co., Ltd., Perren Street, Kentish Town, N.W.
Walker, Jas., & Co., 11, Bishop Court, Anderston, Glasgow.

BOILER MOUNTINGS—
Cockburns Ltd., Cardonald, Nr Glasgow.
McRobie, John, & Sons, 94, Elliott Street, Cranstonhill, Glasgow.
Royles Ltd., Irlam, Nr. Manchester.

BOILER PLATES (Steel)—
Leeds Forge Co., Ltd., Leeds.
Spencer, John, & Sons, Ltd., Newburn-on-Tyne.
Stewarts & Lloyds, Ltd., 41, Oswald St., Glasgow.

BOILER PRESERVATIVE—
Atlas Preservative Co., Ltd., Deptford, S.E.

BOILER TUBES—
Yorkshire Copper Works, Ltd., Leeds.

BOLTS AND NUTS—
Coventry Chain Co., Ltd., Coventry.

BORING MACHINES—
Campbells & Hunter, Ltd., Dolphin Foundry, Leeds.
Greenwood & Batley, Ltd., Albion Works, Leeds.

BRASS & COPPER FITTINGS—
McRobie, John, & Sons, 94, Elliott Street, Cranstonhill, Glasgow.

BRASS & COPPER RODS—
Delta Metal Co., Delta Works, East Greenwich, S.E.

BRASS FOUNDERS—
Billington & Newton, Ltd., Longport, Staffs.
Chambers, John, Ltd., Lowestoft.
Low, Archibald, & Sons, Ltd., 78, Merkland Street, Partick, Glasgow.
[Street, Glasgow.
McGeoch, Wm., & Co., Ltd., 28, West Campbell
McRobie, John, & Sons, 94, Elliott Street, Cranstonhill, Glasgow.
Williams, Wm., Alexandra Brass Foundry, Cardiff.

BRASS NAME-PLATES—
Metograph Co., 280, Cathedral Street, Glasgow.
Rennie & Co., North Greenhill Road, Paisley.

BRASS TUBES—
Yorkshire Copper Works, Ltd., Leeds.

BRASSWORK—
Laycock, W. S., Ltd., Victoria Works, Millhouses, Sheffield.

BRONZE (Manganese)—
Billington & Newton, Ltd., Longport, Staffs.
Bowran, Robt., & Co., Ltd., 4, St. Nicholas Buildings, Newcastle-on-Tyne.
Callender's Cable & Construction Co., Ltd., Belvedere, Kent.
Delta Metal Co., Ltd., E. Greenwich, London, S.E.
Stone, J., & Co., Ltd., Deptford, London, S.E.

BRIGHT STEEL—
Stonehouse Works Co., Ltd., Houghton Street, West Bromwich.

BUCKETS—
Braby, F., & Co., Ltd., Eclipse Works, Glasgow.

BULKHEADS (Patent)—
Hogg-Carr Construction Co., Ltd., Newcastle-on-Tyne.

BUNTING—
Riley, Edward, & Co., Leeds.

BUOYANT DECK SEATS—
[Liverpool.
Crichton, C. & H., Ltd., Huskisson Engine Works, Linkleter's Patent Ship Fittings Co., Hudson Street, North Shields.

BUOYS—
Crichton, C. & H., Ltd., Huskisson Engine Works, Liverpool.
Hingley & Sons, Ltd., Netherton Iron Works, Dudley, Staffs.

CABINET MAKERS—
Stewart, Archibald & Co., 40-48, Union Street, Glasgow.

CABLES (Chains)
Hingley & Sons, Ltd., Netherton Iron Works, Dudley, Staffs.
Sykes, Richard, & Son, Ltd., Cradley Heath.
Taylor, Samuel, & Sons (Brierley Hill), Ltd., Brierley Hill, Staffs.
Wright, Joseph, & Co., Ltd., Tipton, Staffs.

CAISSONS & DOCK GATES—
Swan, Hunter, & Wigham Richardson, Ltd., Wallsend-on-Tyne.

CALORIFIERS—
Low, Archibald, & Sons, Ltd., 78, Merkland Street, Partick, Glasgow.
Royles Ltd., Irlam, Nr. Manchester.

CAPSTANS (Electric)—
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
Mactaggart, Scott & Co., Ltd., Loanhead, Edinburgh.
Stothert & Pitt, Ltd., Bath.

CARGO BLOCKS—
Higginson & Co., 7, Hurst Street, Liverpool.

CARPETS—
Stewart, Archibald & Co., 40-48, Union St., Glasgow.

CASE HARDENING BOXES—
Else, John, & Son, Ltd., 48, Muntz St., Birmingham

CASE HARDENING COMPOSITION—
Else, John, & Son, Ltd., 48, Muntz St., Birmingham

CASE HARDENING OIL—
Else, John, & Son, Ltd., 48, Muntz St., Birmingham

CAST BRASS PLATES—
Brown, Robert, & Co., 12, Espedair St., Paisley.

CASTINGS (Steel)—
Brown, John, & Co., Atlas Works, Sheffield, and Clydebank, Nr. Glasgow.
Darlington Forge Co., Ltd., Darlington.
Spencer, John, & Sons, Ltd., Newburn-on-Tyne.
Stewarts & Lloyd's, Ltd., 41, Oswald St., Glasgow.

CASTINGS (Steel, Iron and Brass)—
Chambers, John, Ltd., Lowestoft.
Darlington Forge Co., Ltd., Darlington.
Hamilton, A., & Sons, 13, Bute Crescent, Docks, Cardiff.
McRobie, John, & Sons, 94, Elliott Street, Cranstonhill, Glasgow.

CEMENT—
Aberthaw & Bristol Channel Portland Cement Co., Ltd., Merthyr House, Cardiff.

CHAINS—
"Coventry" Chain Co., Ltd., Spon End Works, Coventry.

COAL—
Beynon, T., & Co., Ltd., Merthyr House, Cardiff.
Britannic Merthyr Coal Co., Ltd., Cambrian Bldgs., Cardiff.
Cambrian Collieries, Ltd., Cambrian Bldgs., Cardiff.
Davis, D., & Sons, Ltd., Cymric Bldgs., Cardiff.
Ebbw Vale Steel, Iron & Coal Co., Ltd., Merthyr House, Cardiff.
Fernhill Collieries, Ltd., Merthyr House, Cardiff.
Glamorgan Coal Co., Ltd., Cambrian Bldgs., Cardiff.
Harrisons (London), Ltd., 66, Mark Lane, E.C.
Naval Colliery Co. (1897), Ltd., Cambrian Bldgs., Cardiff.
Newport Abercarn Black Vein Steam Coal Co., Ltd., Merthyr House, Cardiff.
Powell Duffryn Steam Coal Co., Ltd., Cardiff.
Rhymney Iron Co., Ltd., Merthyr House, Docks, Cardiff.

COMPASSES (Ship)—
Chadburn's (Ship) Telegraph Co., Ltd., Cyprus Road, Bootle, Lancs.

CONDENSERS—
Bellis & Morcom, Ltd., Birmingham.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
Dawson & Downie, Elgin Works, Clydebank.
Richardsons, Westgarth & Co., Ltd., Hartlepool.
Royles, Ltd., Irlam, Nr. Manchester.
Weir, G. & J., Ltd., Cathcart, Glasgow.
White, J. Samuel, & Co., Ltd., East Cowes, I.W.

CONDENSER TUBES (Brass and Copper)—
Yorkshire Copper Works, Ltd., Leeds.

CONTROLLERS & CONTROL GEAR—
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
[on-Tyne.
Holmes, J. H., & Co., Portland Road, Newcastle-
Reyrolle, A., & Co., Ltd., Hebburn-on-Tyne.

CONVEYORS—
Mather & Platt, Ltd., Manchester.

COOKING APPARATUS—
Braby, F., & Co., Ltd., Eclipse Works, Glasgow.
Grieve, T., & Sons, Bedford Street, North Shields.

COPPER PIPES—
Yorkshire Copper Works, Ltd., Leeds.

COPPERSMITHS—
Braby, F., & Co., Ltd., Eclipse Works, Glasgow.
Chambers, John, Ltd., Lowestoft.
Low, Archibald, & Sons, Ltd., 78, Merkland Street, Partick, Glasgow.
Royles Ltd., Irlam, Nr. Manchester.

COPPER TUBES—
Yorkshire Copper Works, Ltd., Leeds.

CORK INSULATION—
Jones, Fredk., & Co., Ltd., Perren Street, Kentish Town, N.W.
[Newcastle-on-Tyne.
Newalls Insulation Co., 11, Mosley Street,

CORRUGATED IRON—
Braby, F., & Co., Ltd., Eclipse Works, Glasgow.

COUNTER (Engine)
Chadburn's (Ship) Telegraph Co., Ltd., Cyprus Road, Bootle, Lancs.

CRAB WINCHES—
Bullivant & Co., Ltd., 72, Mark Lane, London, E.C.

CRANES—
Ransomes & Rapier, Ltd., 32, Victoria St., S.W.
Stothert & Pitt, Ltd., Bath.

CYLINDERS (Copper)—
York Tube & Copper Works, Ltd., Leeds.

DELTA METAL—
Delta Metal Co., Delta Works, East Greenwich, S.E.

DERRICKS & DAVITS—
Howden, James, & Co., Ltd., 95, Scotland Street, Glasgow.
Stewarts & Lloyds, Ltd., 41, Oswald St., Glasgow.

DISTILLING APPARATUS—
Royles Ltd., Irlam, Nr. Manchester.

DIVING APPARATUS—
Heinke, C. E., & Co., 22, 30, Grange Road, Bermondsey, S.E.
Mining Engineering Co., Ltd., Meco Works, Moorfields, Sheffield.

DOCK & SHIP LIGHTING—
Carbic Ltd., 51, Holborn Viaduct, London, E.C.

DOCK GATES—
Chalmers, Wm., & Co., Ltd., Rutherglen, Nr. Glasgow.
Hamilton, Wm., & Co., Ltd., Port Glasgow, Scotland.
Swan, Hunter & Wigham Richardson, Ltd., Wallsend-on-Tyne.

DOORS (Watertight)—
British Thomson-Houston Co., Ltd., Rugby.
Stone, J., & Co., Ltd., Deptford, S.E.

BUYERS' GUIDE—*continued.*

DREDGE PLANTS—

DREDGING—

DRILLING MACHINES—

DRILLS—

DRILLS (Pneumatic and Electric)—
United States Metallic Packing Co., Ltd., Bradford.

DRY FITTINGS (Laundry)—

DYNAMOS—
Holmes, J. H., & Co., Portland Road, Newcastle-on-Tyne.

ELECTRIC CRANES—
Berry, Henry, & Co., Ltd., Croydon Works, Leeds.
Rayner & Rapier, Ltd., 32, Victoria Street, London, S.W.
Stothert & Pitt, Ltd., Bath.

ELECTRIC DERRICKS—

ELECTRIC DYNAMOS & MOTORS—
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
Holmes, J. H., & Co., Portland Road, Newcastle-on-Tyne.
Mather & Platt, Ltd., Manchester.

ELECTRIC FITTINGS—

ELECTRIC HEATING & COOKING APPARATUS—
British Thomson-Houston Co., Ltd., Rugby.

ELECTRIC LAMPS—
McGeoch, Wm., & Co., Ltd., 28, West Campbell Street, Glasgow.

ELECTRIC LIGHTING—
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
Holmes, J. H., & Co., Portland Road, Newcastle-on-Tyne.
Mather & Platt, Ltd., Manchester.
Sunderland Forge & Engineering Co., Ltd., Sunderland.

ELECTRIC-LIGHTING PLANT—
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
Greenwood & Batley, Ltd., Albion Works, Leeds.
Holmes, J. H., & Co., Portland Road, Newcastle-on-Tyne.
Mather & Platt, Ltd., Manchester.
Sunderland Forge & Engineering Co., Ltd., Sunderland.

ELECTRIC MOTORS—
Boothroyd, H. T., Ltd., Bootle, Liverpool.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
Greenwood & Batley, Ltd., Albion Works, Leeds.
Holmes, J. H., & Co., Portland Road, Newcastle-on-Tyne.
Mather & Platt, Ltd., Manchester.
Sunderland Forge & Engineering Co., Ltd., Sunderland.

ELECTRIC WIRES—
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.

ELECTRICAL CONTRACTORS—
Holmes, J. H., & Co., Portland Road, Newcastle-on-Tyne.
Low, Archibald, & Sons, Ltd., 78, Merkland Street, Partick, Glasgow. [Glasgow.
Mather & Platt, Ltd., Manchester.
Sunderland Forge & Engineering Co., Ltd., Sunderland.

ELECTRICAL ENGINEERS—
Boothroyd, H. T., Ltd., Bootle, Liverpool.
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
Chadburn's (Ship) Telegraph Co., Ltd., Cyprus Road, Pendle, Liverpool.
Graham, Alfred, St. Andrew's Works, Crofton Park Road, S.E.
Holmes, J. H., & Co., Portland Road, Newcastle-on-Tyne.
Mather & Platt, Ltd., Manchester.
Reyrolle, A., & Co., Ltd., Hebburn-on-Tyne.
Sunderland Forge & Engineering Co., Ltd., Sunderland.

ELECTRICAL INSTRUMENTS (Ammeters)—
British Thomson-Houston Co., Ltd., Rugby.
Holmes, J. H., & Co., Portland Road, Newcastle-on-Tyne.

ELECTRICAL INSTRUMENTS (Circuit Breakers)—
Holmes, J. H., & Co., Portland Road, Newcastle-on-Tyne.
Reyrolle, A., & Co., Ltd., Hebburn-on-Tyne.

ELECTRICAL INSTRUMENTS (Relays)—
British Thomson-Houston Co., Ltd., Rugby.
Holmes, J. H., & Co., Portland Road, Newcastle-on-Tyne.
Reyrolle, A., & Co., Ltd., Hebburn-on-Tyne.

ELECTRICAL INSTRUMENTS (Voltmeters)—
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester. [on-Tyne.
Holmes, J. H., & Co., Portland Road, Newcastle-on-Tyne.

EMERY WHEELS—
Sterne, L., & Co., Ltd., Crown Iron Works, Glasgow.

ENAMEL MANUFACTURERS—
Holzapfels, Ltd., Newcastle-on-Tyne.
Websters Ltd., Hull.

ENGINE (Electric Light)—
Belliss & Morcom, Ltd., Birmingham.
Greenwood & Batley, Ltd., Albion Works, Leeds.

ENGINES (Land)—
Chambers, John, Ltd., Lowestoft.

ENGINES (Marine)—
Allen, W. H., Son & Co., Ltd., Queen's Engineering Works, Bedford.
Central Marine Engine Works, West Hartlepool.
Chambers, John, Ltd., Lowestoft.
Hawthorn, R. & W., Leslie & Co., Ltd., St. Peter's, Newcastle-on-Tyne.
Howden, James, & Co., Ltd., Scotland St., Glasgow.
Perman & Co., Ltd., 82-83, Fenchurch Street, E.C.
White, J. Samuel, & Co., Ltd., East Cowes, I.W.

ENGINE & DECK STORES—
McGeoch, Wm. & Co., Ltd., 28, West Campbell Street, Glasgow.
Metallic Valve Co., Colonial House, Water Street, Liverpool.

ENGINE AUXILIARIES—
Aspinall's Patent Governor Co., 7, Strand Street, Liverpool.

ENGINE FITTINGS—
Aspinall's Patent Governor Co., 7, Strand Street, Liverpool.
McRobie, John, & Sons, 94, Elliott Street, Cranstonhill, Glasgow.

ENGINE-ROOM OUTFITS—
Grieve, T., & Sons, Bedford Street, North Shields.
Newalls Insulation Co., 31, Mosley Street, Newcastle-on-Tyne.

ENGRAVERS—

EVAPORATORS—
Central Marine Engine Works, West Hartlepool.
Richardsons, Westgarth & Co., Ltd., Hartlepool.
Weir, G. & J., Ltd., Cathcart, Glasgow.

EXTRUDED METALS (Brass, Bronze, Copper, Delta Metals)
Delta Metal Co., Ltd., E. Greenwich, London, S.E.

FANS—
Adam, J. M., & Co., Greenfield Iron Works, Dalmarnock, Glasgow.
Allen, W. H., Son & Co., Ltd., Queen's Engineering Works, Bedford.
Boothroyd, H. T., Ltd., Bootle, Liverpool.
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg., Co., Ltd., Trafford Park, Manchester. [Belfast.
Davidson & Co., Ltd., Sirocco Engineering Works, Belfast.
Hogan & Wardrop, 2, Gresham Buildings, Basinghall Street, London, E.C.
Keith, James, & Blackman Co., Ltd., 27, Farringdon Avenue, London, E.C.

FEED-WATER HEATERS—
Beresford Eng'n'ring Co., Beresford Lane, Cardiff.
Central Marine Engine Works, West Hartlepool.
Richardsons, Westgarth & Co., Ltd., Hartlepool.
Royles, Ltd., Irlam, Nr. Manchester.
Weir, G. & J., Ltd., Cathcart, Glasgow.

FILES—
Brown, John, & Co., Atlas Works, Sheffield.
Spencer, John, & Sons, Ltd., Newburn-on-Tyne.

FILTERS (Marine)—
Central Marine Engine Works, West Hartlepool.
Chambers, John, Ltd., Lowestoft.
Cockburns, Ltd., Cardonald, Nr. Glasgow.
Mather & Platt, Ltd., Manchester.

FIREBARS—
Liverpool Patents Co., Ltd., Derby Square, James Street, Liverpool.

FIRE EXTINGUISHERS—
Low, Archibald, & Sons, Ltd., 78, Merkland Street, Partick, Glasgow.
Mather & Platt, Ltd., Manchester.

FIRE-FIGHTING APPLIANCES—
Mining Engineering Co., Ltd., Meco Works, Sheffield.

FLAGS—
Riley, Edward, & Co., Leeds.
Speedings, Ltd., Sail Works, Sunderland.

FLOATING DOCKS—
Chalmers, Wm., & Co., Ltd., Rutherglen, Nr. Glasgow. [Scotland.
Hamilton, Wm., & Co., Ltd., Port Glasgow, Scotland.
Swan, Hunter & Wigham Richardson, Ltd., Wallsend-on-Tyne.

FLOOR COVERING—
Docker Bros., Ltd., Metropolitan Road, Saltley, Birmingham.

FORCED DRAUGHT—
Adam, J. M., & Co., Greenfield Iron Works, Dalmarnock, Glasgow. [Belfast.
Davidson & Co., Ltd., Sirocco Engineering Works, Belfast.
Howden, J., & Co., Ltd., Scotland Street, Glasgow.
Keith, James, & Blackman Co., Ltd., 27, Farringdon Avenue, London, E.C.

FORGING PRESSES—
Berry, Henry, & Co., Ltd., Croydon Works, Leeds.
Mactaggart, Scott & Co., Ltd., Loanhead, Edinburgh.

FORGINGS—
Brown, John & Co., Ltd., Atlas Works, Sheffield.
Darlington Forge Co., Ltd., Darlington.
Hingley & Sons, Ltd., Netherton Iron Works, Staffs.
Sunderland Forge & Engineering Co., Ltd., Sunderland.

FORGINGS (Bronze)—
Delta Metal Co., Delta Works, East Greenwich, London, S.E.

FORGINGS (Steel)—
Brown, John, & Co., Ltd., Atlas Works, Sheffield.
Darlington Forge Co., Ltd., Darlington.
Spencer, John, & Sons, Ltd., Newburn-on-Tyne.

FUMIGATORS—
Low, Archibald, & Sons, Ltd., 78, Merkland Street, Partick, Glasgow.

FURNACE BRIDGES—
Hamilton, A., & Sons, 15, Bute Crescent, Docks, Cardiff.
McConnell, A., & Co., Ltd., 60, Drury Buildings, Water Street, Liverpool.

FURNACES—
Brown, John, & Co., Ltd., Atlas Works, Sheffield.
Deighton's Patent Flue & Tube Co., Ltd., Vulcan Works, Pepper Road, Leeds.
Leeds Forge Co., Ltd., Leeds.
Piggott, T., & Co., Ltd., Birmingham.

FUSES—
Reyrolle, A., & Co., Ltd., Hebburn-on-Tyne.

GALLEY GEAR—
Grieve, T., & Sons, Bedford Street, North Shields.

GALVANIZERS—
Braby, F., & Co., Ltd., Eclipse Works, Glasgow.

GAS ENGINES—
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
Mather & Platt, Ltd., Manchester.

GAUGES—
Chatwin, Thos., Ltd., Gt. Tindal St., Birmingham.

GEAR CUTTING—
Campbells & Hunter, Ltd., Dolphin Foundry, Leeds.

GEARING—
Campbells & Hunter, Ltd., Dolphin Foundry, Leeds

GEARS—
Spencer, John, & Sons, Ltd., Newburn-on-Tyne.

GEARS (Noiseless or Silent)—
British Thomson-Houston Co., Ltd., Rugby.
Brown, David, & Sons (Hfd.), Ltd., Huddersfield.

GOVERNORS—
Aspinall's Patent Governor Co., 7, Strand Street, Liverpool.

GRINDING MACHINES—
Greenwood & Batley, Ltd., Albion Works, Leeds.

GRINDING WHEEL MACHINES—
Sterne, L., & Co., Ltd., Crown Iron Works, Glasgow

HATCH COVERS (Patent)—
Hogg-Carr Construction Co., Ltd., Newcastle-on-Tyne.

HEATING APPARATUS—
Ashwell & Nesbit, Ltd., Barkby Lane, Leicester.
Royles, Ltd., Irlam, Nr. Manchester.
Saunders & Taylor, Ltd., 43, Lower Mosley Street, Manchester.

HEATING ENGINEERS—
Ashwell & Nesbit, Ltd., Barkby Lane, Leicester.
Low, Archibald, & Sons, Ltd., 78, Merkland Street, Partick, Glasgow.
Royles, Ltd., Irlam, Nr. Manchester.
Saunders & Taylor, Ltd., 43, Lower Mosley Street, Manchester.

HELM SIGNAL TELEMOTORS—
Mactaggart, Scott & Co., Ltd., Loanhead, Edinburgh.

HIGH SPEED DRILLS—
Brown, John, & Co., Atlas Works, Sheffield.

HIGH SPEED STEEL—
Brown, John, & Co., Atlas Works, Sheffield.

HOISTS—
Mather & Platt, Ltd., Manchester.
Stothert & Pitt, Ltd., Bath.
Waygood-Otis, Ltd., Falmouth Road, S.E.

BUYERS' GUIDE—*continued.*

HOSE—
Heinke, C. E., & Co., 88, 89, Grange Road, Bermondsey, London, S.E.

HYDRAULIC CRANES—
Berry, Henry, & Co., Ltd., Croydon Works, Leeds.
Brown Brothers & Co., Ltd., Rosebank Iron Works, Edinburgh.
Mactaggart, Scott & Co., Ld., Loanhead, Edinburgh

HYDRAULIC MACHINERY—
Armstrong, Sir W. G., Whitworth & Co., Ltd., Elswick Works, Newcastle-upon-Tyne.
Berry, Henry, & Co., Ltd., Croydon Works, Leeds.
Waygood-Otis, Ltd., Falmouth Road, S.E.

HYDRANTS—
McRobie, John, & Sons, 94, Elliott Street, Cranstonhill, Glasgow.

INDIARUBBER—
Heinke, C. E., & Co., 88, 89, Grange Road, Bermondsey, London S.E.

INDICATORS—
Robinson, A., & Co., Ltd., Bootle, Liverpool.

INDUCED DRAUGHT—
Davidson & Co., Ld., Sirocco Eng'n'g Wrks, Belfast
Keith, James, & Blackman Co., Ltd., 27, Farringdon Avenue, London, E.C.

INSULATIONS—
Jones, Fredk., & Co., Ltd., Perren Street, Kentish Town, N.W. [Liverpool.
Liverpool Refrigeration Co., Ltd., Colonial House,

IRON ROOFS AND BUILDINGS—
Braby, F., & Co., Ltd., Eclipse Works, Glasgow.

JOINTING MATERIAL (Manganesite)—
Hudson & Co.'s Successors, John, 15, Victoria Warehouses, Mansell Street, E.C.

LAMPS AND LIGHTS—
Grieve, T., & Sons, Bedford Street, North Shields.
Kaye, Joseph, & Sons, Ltd., Leeds.

LAUNCHES—
Chambers, John, Ltd., Lowestoft.
Crichton, J., & Co., Saltney Shipyard, Chester.
Leitch, John, & Co., The Ferry, Renfrew, Scotland.
Livingstone & Cooper, Ltd., Hessle, Hull.
MacLaren Bros., Ltd., Dumbarton.
Perman & Co., Ltd., 82-83, Fenchurch St., E.C.
Seamless Steel Boat Co., Ltd., Wakefield.
Thornycroft, John I., & Co., Ltd., Caxton House, Westminster, London, S.W.
Watson, J. S., Gainsborough.
White, J. Samuel, & Co., Ltd., East Cowes, I.W.

LAUNDRY MACHINERY—
Bradford, T., & Co., Salford, Manchester.

LAVATORY FITTINGS AND APPLIANCES—
Levick, John, Alma Street, Aston, Birmingham.

LEAD (Sheets and Pipes)—
Rimer Bros., Newcastle-on-Tyne.

LEAD (White and Red)—
Rimer Bros., Newcastle-on-Tyne.

LIFEBELTS AND BUOYS—
Speedings Ltd., Sail Works, Sunderland.

LIFTS (Window)—
Laycock, W. S., Ltd., Victoria Works, Millhouses, Sheffield.

LIFTS AND HOISTS—
Mactaggart, Scott & Co., Ld., Loanhead, Edinburgh
Waygood-Otis, Ltd., Falmouth Road, S.E.

LIGHTERAGE—
Alexander, W. H. J., St. John's Wharf, Wapping, E.

LIGHTERS—
Chalmers, Wm., & Co., Ltd., Rutherglen, Nr. Glasgow.
Crichton, J., & Co., Saltney Shipyard, Chester.
Watson, J. S., Gainsborough.

LIMEWASHING & DISINFECTING MACHINES—
Stonehouse Works Co., Ltd., Houghton Street, West Bromwich.

LOCKS—
Kaye, Joseph, & Sons, Ltd., Leeds.

LOCOMOTIVE TUBES (Copper & Brass)—
Yorkshire Copper Works, Ltd., Leeds.

LUBRICATORS— [Cranstonhill, Glasgow.
McRobie, John, & Sons, 94, Elliott Street,

MACHINE TOOLS—
Campbells & Hunter, Ld., Dolphin Foundry, Leeds.
Greenwood & Batley, Ltd., Albion Works, Leeds.
Scriven & Co., Leeds Old Foundry, Leeds.

MACHINERY NAME PLATES—
Brown, Robert, & Co., 12, Espedair St., Paisley.

MAGNESIA—
Jones, Fredk., & Co., Ltd., Perren Street, Kentish Town, N.W.

MARINE ENGINEERS—
Bailey, C. H., Newport, Mon. Barry Docks.
Barry Graving Dock & Engineering Co., Ltd.,
Brown, John, & Co., Ltd., Clydebank, Nr. Glasgow.
Chambers, John, Ltd., Lowestoft.
Crichton, C. & H., Ltd., Huskisson Engine Works, Liverpool. [Southampton.
Day, Summers & Co., Ltd., Northam Ironworks,
Delegación de la Compañía Trasatlantica, Cadiz.
Diamond, Thos., & Co., Cardiff.
Doxford, Wm., & Sons, Ltd., Sunderland.
Elliott & Jeffery, East Dock, Cardiff.
Gray, Wm., & Co., Ltd., West Hartlepool.
Harland & Wolff, Ltd., Belfast.
Harris Bros., Ltd., Cambrian Dry Docks, Swansea.
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BUYERS' GUIDE—*continued.*

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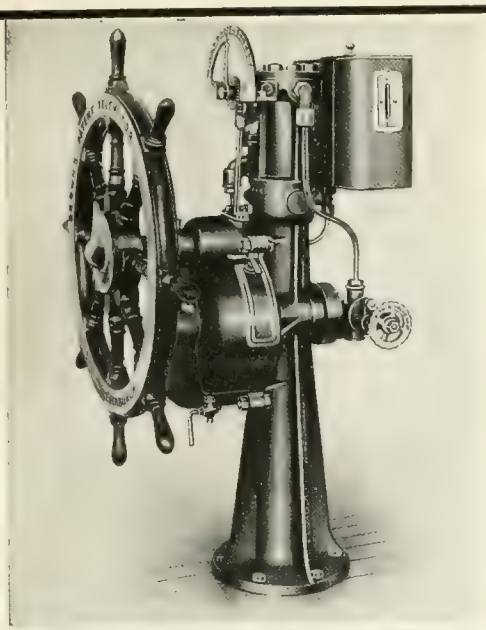

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A

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Amos & Smith, M., & Co. ... ... —
Alexander, W. H. 1
Allen, W. H., Son & Co., Ltd. ... ... —
Ashworth & Newall, Ltd. ... ... —
Aspinall's Patent Governor Co., Ltd. ... —
Atlas Preservative Co., Ltd. ... ... *

B

Bailey, C. H. 14
Barry Graving Dock & Engineering Co., Ltd. —
Bennis Patent Packing & Rubber Co., Ltd. —
Bennis & Mumford, Ltd. ... ... —
Beresford Engineering Co. 16
Berry, Henry, & Co., Ltd. ... ... —
Bertram, J., & Co., Ltd. 3
Boothroyd, H. T., Ltd. ... ... —
Bowran, Robt., & Co., Ltd. 1
Bracy, Fredk., & Co., Ltd. ... ... —
Bradford, T., & Co. 22
Briggs, W., & Sons, Ltd. ... ... —
Britannic Merthyr Coal Co., Ltd. ... 11
British Thomson-Houston Co., Ltd. ... —
British Westinghouse Electric and Manufacturing Co., Ltd. ... ... —
Brooke, G. ... ... —
Brown, Bros., & Co. 1
Brown, David, & Sons, Ltd. ... ... —
Brown, John, & Co., Ltd. ... ... —
Brown, Robert, & Co., Ltd. ... ... —
Buyers' Guide ... ... 17, 18, 19 & 20

C

Callender's Cable & Construction Co., Ltd. —
Cambrian Collieries, Ltd. 11
Campbells & Hunter, Ltd. ... ... —
Carlisle, Ltd. 12
Central Marine Engine Works ... ... —
Chadburns Telegraph Co., Ltd. 1
Chalmers, Wm., & Co., Ltd. ... ... —
Chambers, John, Ltd. ... ... —
Chatwin, Thos., Ltd. ... ... —
Cockburn, Ltd. ... ... —
Cocks, Harry, & Co. ... ... —
Coventry Chain Co., Ltd. 21
Crichton, C. & H., Ltd. ... ... —
Crichton, J., & Co., Ltd. ... ... —

D

Darlington Forge Co., Ltd. ... ... —
Davey & Co., Limited, Ltd. ... ... —
Davidson & Co., Ltd. ... ... —
Davis, D., & Sons, Ltd. 10
Dawson & Downie 21
Day, Summers & Co., Ltd. 6
Deighton's Patent Tube & Flue Co., Ltd. 11
Delta Metal Co., Ltd. 1
Diamond, T., & Co. 21
Dixon Bros., Ltd. ... ... —
Dowlais & Sons, Ltd. ... ... —
Durham, Churchill & Co. ... ... —

E

Edina Manufacturing Co. ... ... —
Elder, Dempster & Co., Ltd. 15
Elliot & Jeffery 15
Else, John, & Son, Ltd. 21

G

Glamorgan Coal Co., Ltd. 11
Glen Line, Ltd. 15
Graham, Morrell, & Co. 24
Gray, Wm., & Co., Ltd. ... ... —
Grayson, H., & Co., Ltd. 14
Greenwood & Batley, Ltd. ... ... —
Grieve, Thos., & Sons ... ... —

H

Hall, J. & F., Ltd. 13
Hall, J. P., & Sons, Ltd. ... ... —
Hamilton, Archibald H., & Co. ... ... —
Hamilton, A., & Sons 16
Hamilton, Wm., & Co., Ltd. ... ... —
Harland & Wolff, Ltd. ... ... —
Harris Bros., Ltd. ... ... —
Harrisons (London), Ltd. ... ... —
Hastie, John, Ltd. 2
Hawthorn, R. & W., Leslie & Co., Ltd. —
Heinke, C. E., & Co. ... ... —
Higginson, T., & Co. 24
Hill's Dry Docks 14
Hingley, N., & Sons 1
Hogan & Wardrop 4
Hogg-Carr Construction Co., Ltd. ... —
Holmes, J. H., & Co. ... ... —
Holzapfels, Ltd. 13
Hoyle, Robson & Barnett, Ltd. ... —
Howden, J., & Co., Ltd. 8
Hudson, John, & Co.'s Successors ... —

I

Isherwood, J. W. 12

J

Jones, Fredk., & Co., Ltd. ... ... —

K

Kaye, Joseph, & Sons, Ltd. ... ... —
Keith Blackman Co., Ltd., James ... —

L

Lamport & Holt, Ltd. 15
Laycock, W. S., Ltd. 8
Leeds Forge Co., Ltd. 8
Leitch, J., & Co. ... ... —
Levick, John ... ... —
Linkleter's Patent Ship Fittings Co. ... —
Liverpool Patents Co., Ltd. 21
Liverpool Refrigeration Co., Ltd. ... 11
Livingstone & Cooper, Ltd. ... ... —
Loveridge, Ltd. 16
Low, Archibald, & Sons, Ltd. ... —

M

MacLaren Bros., Ltd. ... ... —
Mactaggart, Scott & Co., Ltd. ... 3
Martin, W. C., & Co. 1
Mather & Platt, Ltd. ... ... —
McConwell, A., & Co., Ltd. 22
McGeoch, Wm., & Co., Ltd. 1
McRobie, John, & Sons ... ... —
Metallic Valve Co. 22
Metograph Co. ... ... —
Milburn, A., & Co. ... ... —
Mining Engineering Co., Ltd. ... —
Mountstuart Dry Docks, Ltd. ... —

N

Naval Colliery Co. (1897), Ltd. ... 11
New Zealand Shipping Co., Ltd. ... 15
Nippon Yusen Kaisha ... ... —
North Eastern Railway Docks ... 14

P

P. & O. Steam Navigation Co. ... 15
Perman & Co., Ltd. ... ... —
Phillips, John, & Sons, Ltd. ... ... —
Piggott, Thos., & Co., Ltd. ... ... —
Powell Duffryn Steam Coal Co., Ltd. —

R

Ransomes & Rapier, Ltd. 4
Rennie & Co. ... ... —
Reyrolle, A., & Co., Ltd. ... ... —
Rhymney Iron Co., Ltd. 10
Richardsons, Westgarth & Co., Ltd. —
Riley, Edward, & Co. 21
Rimer Bros. ... ... —
Robinson, A., & Co. 21
Royal Mail Steam Packet Co., Ltd. ... 15
Royal Merchant Seamen's Orphanage —
Royles, Ltd. 23

S

Saunders & Taylor, Ltd. ... ... —
Scriven & Co. 23
Seamless Steel Boat Co., Ltd. ... —
Shearman, John, & Co., Ltd. ... 21
Simons, Wm., & Co., Ltd. ... ... —
Speedings, Ltd. ... ... —
Spencer, John, & Sons, Ltd ... ... —
Staffordshire Tube Co., Ltd. 16
Stephen, Alex., & Sons, Ltd. ... —
Sterne, L., & Co., Ltd. 10
Stewart & Lloyd's, Ltd. ... ... —
Stewart, Arch., & Co. ... ... —
Stone, J. & Co., Ltd. 1
Stonehouse Works Co., Ltd. ... ... —
Stothert & Pitt, Ltd. ... ... —
Sunderland Forge & Eng. Co., Ltd. ... —
Superheater Corporation, Ltd. ... 13
Swain, J., & Son, Ltd. 23
Swan, Hunter & Wigham Richardson, Ltd. ... ... —
Swan, Hunter & Wigham Richardson, Ltd., and Maxwell Ballard ... 12
Sykes, R., & Sons, Ltd. ... ... —

T

Taylor, Samuel, & Sons ... ... —
Thornycroft, John I., & Co., Ltd. ... 1
Tilbury Contracting & Dredging Co., Ltd. ... ... —
Trewent, F. J., & Proctor, Ltd. ... 1

U

Union-Castle Line ... ... —
United States Metallic Packing Co. ... 10

W

Wadkin & Co. ... ... —
Walford, Leopold (London), Ltd. ... —
Walker, James, & Co., Ltd. ... ... —
Walker, James (Glasgow) ... ... —
Wailes Dove Bitumastic Ltd. ... ... —
Wallsend Slipway & Eng'g. Co., Ltd. —
Watson, J. S. 6
Waygood-Otis, Ltd. 8
Websters Ltd. 21
Weir, G. & J., Ltd. ... ... —
Welin Davit & Engineering Co., Ltd. —
White, J. Samuel, & Co., Ltd. ... 6
Whitfield's Safe and Door Co. ... 16
Williams, Wm. 21
Workman, Clark & Co., Ltd. ... ... —
Wright, Joseph, & Co., Ltd. 3

Y

Yarrow & Co., Ltd. ... ... —
Yorkshire Copper Works, Ltd. 1

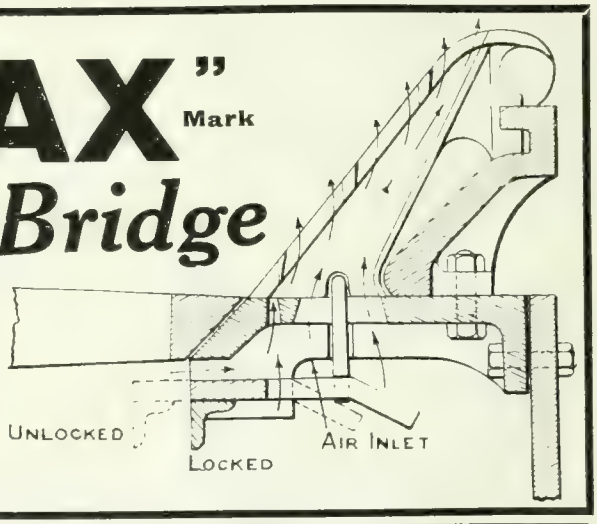
* *Where no number is shewn against an Advertiser's name, the advertisement appears either in previous or subsequent issues.*
Classified Index to Advertisers will be found on pages 17, 18, 19 and 20.

(REGISTERED)

"Trade **TRIMAX** Mark"

Metal Furnace Bridge

(PATENT No. 29657, 1912.)



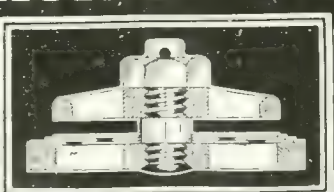
A. McCONWELL & CO., LTD., 60, Drury Buildings, — LIVERPOOL.

AGENTS — London—C. N. Ash, Billiter Square Buildings, E.C.
Glasgow—Danl. Ferguson, 27, Oswald Street.
Sunderland—Geo. Swainston, Jnr., 48, West Sunnyside.

Telegrams—"Turbinia, Liverpool." Telephone—No. 5994 Central.

KINGHORN'S PATENT VALVES

THE BEST VALVE FOR PUMPS OF ALL DESCRIPTIONS ADOPTED UNIVERSALLY AND USED BY 15 ADMIRALTIES.



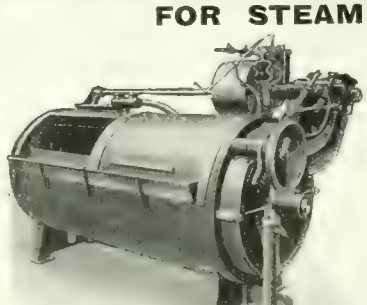
FITTED TO H.M.S. DREADNOUGHT & SISTER SHIPS & TO THE NEW CUNARD WHITE STAR & OTHER LEADING LINERS.

TELEPHONE No. 5218 CENTRAL

THE METALLIC VALVE Co.
COLONIAL HOUSE, WATER STREET, LIVERPOOL.

TELEGRAMS: "VALVE"

BRADFORDS'
LAUNDRY MACHINERY
FOR STEAMSHIPS



Bradfords' "Surgar" Washing, Boiling & Rinsing Machine — Saves Water, Soap, and Labour.

Laundries, ashore and afloat, a speciality.

Electric, Steam, or Hand-power.

Efficient and Economical.

Plans, Estimates, and Catalogue (No. 510) post free on application.

T. BRADFORD & Co.

MANCHESTER: Crescent Iron Works, Salford.

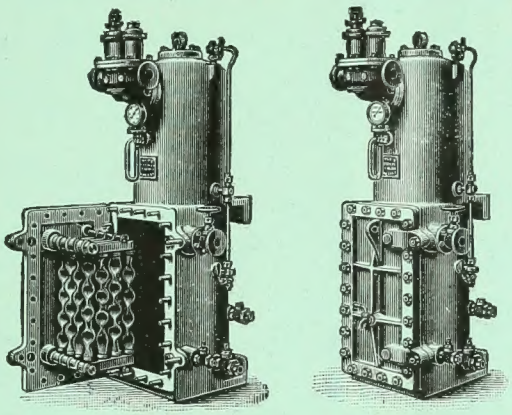
LONDON: 141-142, High Holborn.

LIVERPOOL: 130, Bold Street.

ROW'S PATENT EVAPORATORS

FRESH WATER CONDENSERS. FEED WATER HEATERS.

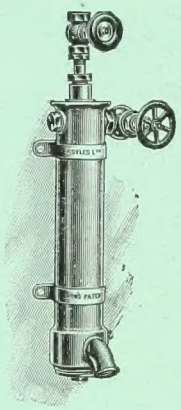
HIGHER DUTY, LESS WEIGHT,
MORE COMPACT,
THAN ANY OTHER SYSTEM.



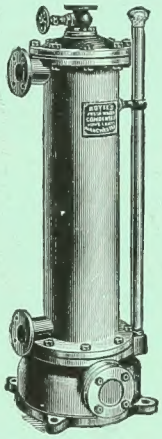
THE "ROW" EVAPORATOR.
Shown open for Cleaning. Closed.

Row's Patent Tube, shown in the margin, which is the leading feature of these Specialities, is **Twice as Efficient** as plain round tube service, and the advantage accruing is obvious. The Tube has a remarkable property of casting scale.

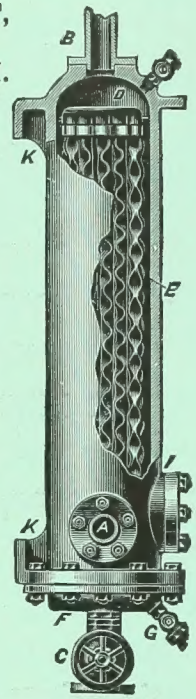
Full Descriptive Lists sent on application.



Instantaneous Water Heater for Ships' Baths & Lavatories.



FRESH WATER CONDENSER.



LIVE STEAM HEATER.

ROYLES LIMITED, ENGINEERS AND SPECIALISTS,
Dalham Works, IRLAM, near MANCHESTER.

Telegrams—ELYOR, CADISHEAD. Telephone—No. 6718 MANCHESTER.

SWAINS' BLOCKS

— GIVE BRILLIANT RESULTS AND —
ALWAYS LEAVE A GOOD IMPRESSION.

Engineers' requirements in the matter of illustration are thoroughly understood by us, and we shall welcome your enquiries

JOHN SWAIN & SON, LTD.,
Columbia House, 89-90, Shoe Lane, E.C.
WORKS: High Barnet.
BRANCHES:
Glasgow, Manchester and Paris.

SCRIVEN & Co.

LEEDS OLD FOUNDRY,
LEEDS.

Tel. Add.: "SCRIVEN."
'Phone 1819.

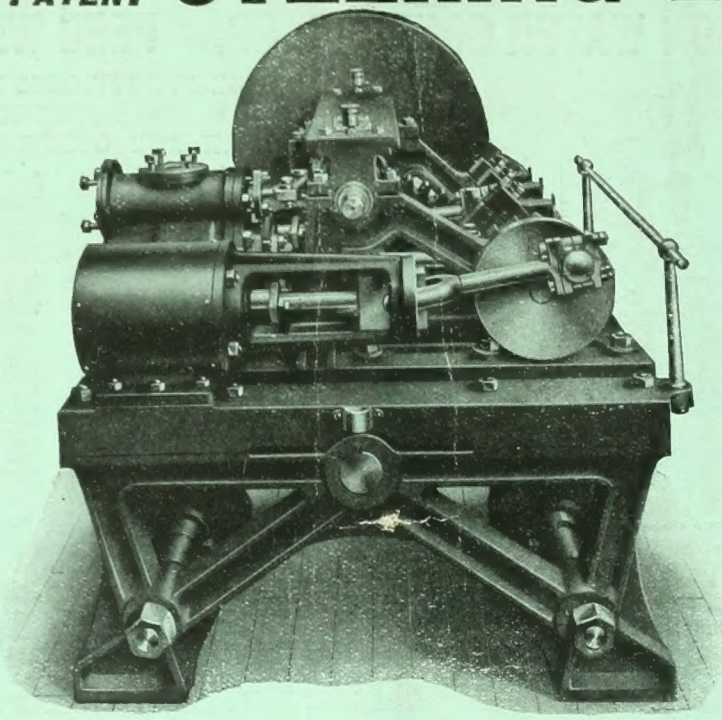
MACHINE TOOLS

GENERAL AND SPECIAL FOR SHIPYARDS.

THE

"MOSS" PATENT STEERING ENGINE

THE CYLINDERS ARE FIXED AND THE ORDINARY SLIDE VALVES, ECCENTRICS, AND RODS ARE DISPENSED WITH.



HAVING FEWER WORKING PARTS THE COST OF UPKEEP IS CONSIDERABLY LESS THAN ANY OTHER STEERING GEAR.

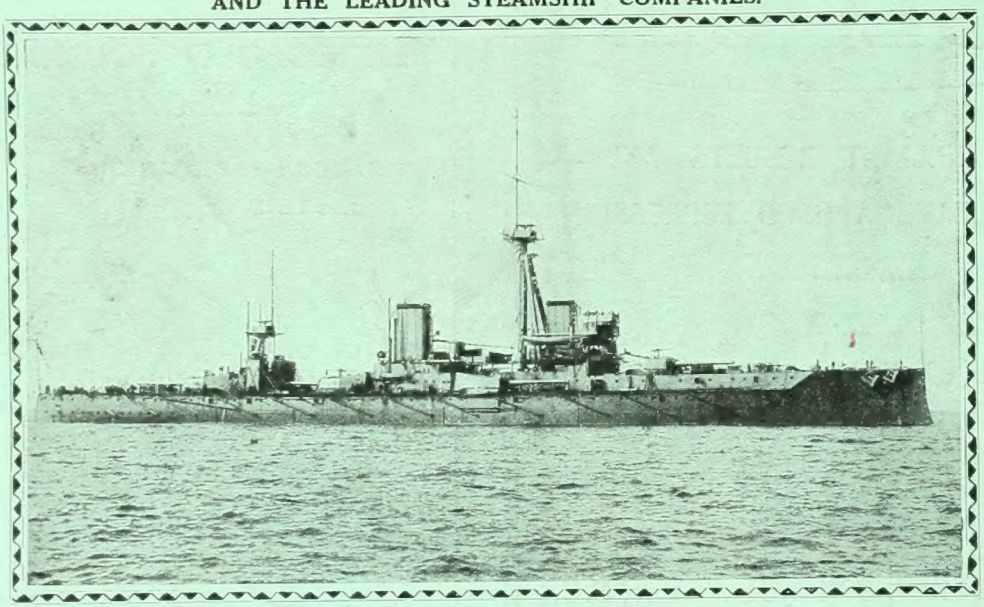
Sole Makers: HIGGINSON & CO., Engineers, Hurst Street, Liverpool.

GRAHAM'S

PATENT LOUD-SPEAKING NAVAL TELEPHONES

ADOPTED BY THE BRITISH ADMIRALTY, FOREIGN GOVERNMENTS AND THE LEADING STEAMSHIP COMPANIES.

The Telephone Without Equal for Every Class of Naval Construction.



Graham's Instruments are Original Models Designed and Manufactured by Specialists.

ALFRED GRAHAM & COMPANY,

ST. ANDREW'S WORKS, CROFTON PARK,

TELEGRAMS: "NAVALHADA, BROCK, LONDON." LONDON, S.E. TELEPHONE: SYDENHAM, NO. 952.

London: Printed by Harrison & Sons, Printers in Ordinary to His Majesty, 45, 46 and 47, St. Martin's Lane, London, W.C., and published by the Proprietors of Shipbuilding and Shipping Record, at Queen Anne's Chambers, Broadway, Westminster, London, S.W. *October* 7, 1915.